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ADDITIONS AND CORRECTIONS TO THE BRITISH LIST OF PLATYPEZIDAE (DIPTERA), INCORPORATING A REVISION OF THE PALAEARCTIC SPECIES OF CALLOMYIA MEIGEN

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I recently gave an account of the Kentish fauna of this family (Chandler, 1973), in which I included a key to the British species designed to provide a composite account of the latest views on the classification and nomenclature and to update the last key to the British species by Verrall (1901). In Verrall's work sixteen species were dealt with and this had increased to twenty-five when my key was compiled. In the present paper the total is raised to thirty-one.

When last writing I alluded to a number of further changes which would be found necessary and some doubtful points which require to be clarified. I am now bringing together the results of my investigations into these problems so that hopefully some improvement may be made in the list of Platypezidae to be included in the forthcoming new edition of the 'Kloet & Hincks' Diptera check list.

The establishment of a new monotypic genus *Orthovena* Kessel & Buegler (1972b) for the British species keyed by me as *Plesioclythia furcata* (Fallén) should be noted; as I mentioned previously (*op. cit.*) this species is somewhat different from the other originally included species of *Plesioclythia* and there are apparently no other known species close enough to be considered congeneric with it, either in Europe or North America. The other changes respecting the British fauna involve the genera *Microsania*, *Callomyia*, *Agathomyia* and *Platypeza*, also the addition of the genus *Seri* on a species new to Britain which has been previously described from Europe in the genus *Clythia* (i.e. *Platypeza*). These are dealt with under their respective generic headings.

GENUS *MICROSANIA* ZETTERSTEDT

Only two species of this genus have hitherto been recorded as British, i.e. *M. pallipes* (Meigen) and *M. pectinipennis* (Meigen) of which the second is much the commoner species here and on the continent. Four other species have, however, been described from Europe and three of them occur in Belgium. One of these, *M. stigmatalis* Zetterstedt, is common there and it was to be expected that it should turn up here eventually.

During 1972, I was fortunate in collecting *Microsania* in numbers in three localities, always in the smoke of wood fires. On one occasion the catch included all three of the species mentioned above and on another occasion *M. stigmatalis* was taken in company with *M. pectinipennis* only. Also, this year, I again collected the two latter species under the same circumstances. Apart from these captures of mine I have only seen one other British specimen of *M. stigmatalis*, a male collected by Mr. J. E. Collin and in his collection in the Oxford University Museum.

Microsania stigmatalis Zetterstedt

This is easily distinguished from *M. pallipes* by the bristling of the body being entirely black as in *M. pectinipennis*. From the latter species it can be separated by the darkened stigma (pale grey in *pectinipennis*), somewhat shorter wings and the absence of the small curved spine beneath the tip of the hind tibiae characteristic of that species. Separation from another European species, *M. vrydaghi*

Collart, is more difficult but there are good specific characters in the structure of the large external male genitalia of all *Microsania* species. I have figured lateral views (*in situ*) of these organs for the three species now known to occur in Britain (Figs. 1-3); the other species are figured by Collart (1954).

In order to facilitate the recognition of any *Microsania* likely to be found here in the future the following key is included. It is based on the key provided by Collart (1954) to the five Belgian species and modified to include *M. meridionalis* (Collart, 1960).

1. Larger more strongly built species. Posterior trochanters bearing a strong spine. Posterior tibiae distinctly bent towards the middle, external bristles present only on their basal half (Belgium).

straeleni Collart

- Smaller species. The posterior trochanters without a spine. Hind tibiae not distinctly bent towards the middle, external bristles present along their entire length.

2.

2. Hind tibiae bearing a distinct curved internal apical spur (this is sometimes difficult to see as it may be damaged or adpressed to the tarsi and both hind legs should be carefully examined). Stigma of wing pale grey.

pectinipennis (Meigen)

- No such curved spur.

3.

3. Thorax with humerals, posthumerals and notopleurals yellowish white. Abdomen with whitish hairs at the base and on the lateral edges of the tergites.

4.

- Thorax and abdomen with all hairs and bristles black.

5.

4. Posterior femora, at least in males, abruptly truncate at the tip beneath and bearing a distinctive bristling (Greece and southern France).

meridionalis Collart

- Posterior femora not unusually modified.

pallipes (Meigen)

5. Upper claspers of hypopygium, seen from the ventral side, with external edge sinuous, abruptly bent inwardly in an acute angle at the tip. Base of these claspers with a long narrow process on the internal side. Lower claspers widely cut into at the tip, with narrow branches, bearing a very long external bristle towards the base.

stigmatalis Zetterstedt

- Upper claspers of the hypopygium, seen from the ventral side, without a sinuous external edge, bent towards the inside from the base. Base of these claspers bearing a short rounded process on the internal side. Lower claspers not widely cut into at the tip, with stout branches, apically bearing a series of strong spines and without a very long bristle towards the base (Belgium).

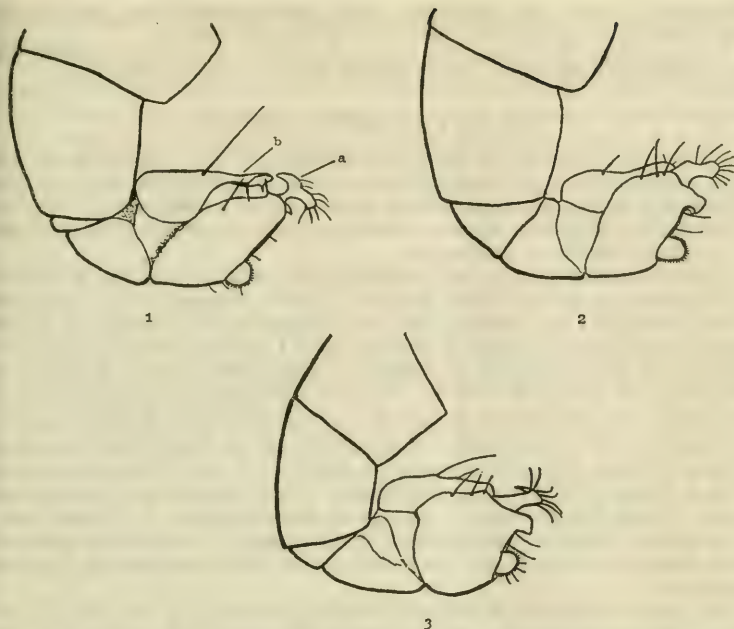
vrydaghi Collart

The British material of *Microsania* which I have seen may be summarised as follows. Searching at suitably smouldering wood fires should extend our knowledge of their distribution easily if carried out in unworked areas. Nothing is yet known about the development of these flies, which are so rarely found in any other way.

M. stigmatalis Zetterstedt

The male only has been collected in Britain. All specimens on which this is being added to the British list are included.

Hants: East Tisted, 28.viii.1972 (18) at bonfire smoke with *pallipes* (4 males) and



FIGS. 1-3. Lateral views of the male hypopygium of *Microsania* species. 1. *M. stigmatalis* Zett. 2. *M. pectinipennis* Mg. 3. *M. pallipes* Mg. a = upper claspers; b = lower claspers.

pectinipennis (numerous males and a few females); Wickham, 23.vi.1973 (1) with *pectinipennis* (several) (P. J. Chandler). **Heref**: Stoke Edith, 23.ix.1972 (5) at bonfire smoke with *pectinipennis* (very numerous) (P. J. Chandler). **Suff**: Newmarket, 14.vii.1941 (1) (J. E. Collin; Oxford Univ. Mus.).

M. pectinipennis (Meigen)

I have examined more than 250 males and nearly 50 females but these are only from 22 localities, listed below. It has been collected in all months from May to October.

Kent: Orpington; Pett's Wood. **Surrey**: Selsdon. **Essex**: Benfleet. **Suff**: Newmarket. **Norf**: Horsford; Blakeney Point. **Cambs**: Chippenham Fen. **Herts**: Welwyn. **Bucks**: Stoke Poges. **Oxon**: Bix Bottom. **Berks**: Cumnor Hill. **Hants**: New Forest; King's Somborne; East Tisted; Wickham. **Glos**: Durdham Down; Filton. **Heref**: Stoke Edith. **Brecon**: Llanwrtyd Wells. **Yorks**: Leeds. **Inverness**: Strathspey; Nethy Bridge.

M. pallipes (Meigen)

Although first recorded from Britain at the same time as *pectinipennis* this species has since been found much less frequently. I have examined 36 males and only 3 females from Britain; details are given below.

Males: **Surrey**: Bookham Common, 10.v.1964 (2) (L. Parmenter). **Hants**: New Forest (Woodcrates), 18.viii.1934 (1) (J. E. Collin; Oxford Univ. Mus.); East Tisted, 28.viii.1972 (4) (P. J. Chandler). **Suff**: Newmarket, Sussex Lodge, 14.vii.1941 (6);

28.vii.1948 (1) (J. E. Collin; Oxford Univ. Mus.). **Norfolk**: Blakeney Point, 10.vi.1930 (2); near Horsford, 10.vii.1934 (20) (J. E. Collin; Oxford Univ. Mus.).

Females: **Hants**: New Forest (Mark Ash), 26.v.1939 (1) (J. E. Collin; Oxford Univ. Mus.). **Norfolk**: Blakeney Point, 10.vi.1930 (2) (J. E. Collin; Oxford Univ. Mus.).

GENUS *CALLOMYIA* MEIGEN

When I last wrote on the British Platypezidae (1973) I included in my key both sexes of the two *Callomyia* species accepted by Verrall (1901) (i.e. *speciosa* Meigen and *amoena* Meigen) and the female only of a third species added by Wood (1904, 1905) under the name *elegantula* Fallén, which was misapplied, the true *elegantula* being an *Agathomyia*.

In the Introduction to my key I mentioned the inclusion in Kloet & Hincks' (1945) check list of two further species, *C. elegans* Meigen and *C. leptiformis* Fallén, although I was unable to find any reference to their existence as British species subsequent to the work of Walker (1851). I had unfortunately overlooked the mention by Verrall (1912) of males of *C. elegans* being found at Porthcawl in Glamorgan by Col. J. W. Yerbury. My excuse for overlooking this was that it had been a late addition (no. 60a) to the hundred new species of British Diptera recorded on that occasion and was not mentioned in the introductory list of species included. The only reference to *leptiformis* I have found more recent than in Verrall (1901) was by Charbonnier (1917); he quoted a record from Leigh Woods first recorded by Dale and also mentioned by Verrall under *C. amoena*, of which he considered *leptiformis* a variety. The specimen concerned does, however, still exist and is a female of the species recorded by Wood as *elegantula*.

My recent examination of most available British material of this genus has led me to the conclusion that there are indeed four quite distinct species in this country and I believe that I have now correctly identified both sexes in each case. Having reached this conclusion it has become necessary to make some attempt to do for this genus what Verrall (1901) achieved for the genus *Platypeza* sensu lato. Verrall's remarks on the unsatisfactory status of several of the species have hitherto continued to apply.

The chief cause of this problem is undoubtedly the marked difference in body colouration between the sexes, combined with the uniform morphology within each sex throughout the genus. For this reason it is extraordinarily difficult to correctly associate the sexes unless they are taken *in copula*, a rare event in this family. Rearing has not helped in this genus as only one European species, *C. amoena* Meigen, has yet been reared and then only singly and on very few occasions. I am now convinced that most authors have repeatedly made wrong assumptions about the association of the sexes in *Callomyia*, based usually on finding the male of one species and the female of another flying together in the same locality on the same day. My own experience at Bix Bottom, Oxon., has shown that three species may occur together in a very restricted area, this being due to the probable similarity in larval habitat, i.e. fungi or fungal mycelium encrusting the damp bark beneath fallen trees and the scarcity or extreme localisation of suitable habitats in the 'tidy' woodlands of today.

It should perhaps first be pointed out that the best specific characters in the male lie in the highly characteristic structure of the large external genitalia, while in the female there is structural uniformity and the colour and arrangement of the abdominal markings provide the best characters. I am, however, certain that the shape and extent of the abdominal markings is more important than fine distinctions in their colour and I agree with Verrall that too much attention

has been paid to the relative amounts of orange and silver on the pale abdominal bands.

The European species were mainly described from very limited material and the salient specific features were generally not realised at the time of description and it has consequently been necessary to sort out the specific limits and decide then which of these species each of the earlier authors had before them in order to correctly assign nomenclature as far as possible. *Callomyia* is a small genus, holarctic in distribution and not found in more southerly latitudes, but the number of available names is certainly greater than the actual number of known species for the reasons stated above. In North America, Kessel has adopted the policy of giving different names to the sexes until such time as they can be correctly associated—he is perhaps fortunate in that few workers on the Platypozidae have preceded him on that continent. In their revision of the North American species, Kessel & Buegler (1972a) included seven distinct males and five females, but as only two of the females (one through rearing, the other taken *in copula*) could be associated with their respective males, these were described under ten different names.

In the Palaearctic Region there are eleven available names, twelve if the misapplied name *elegantula* of Wood be taken into account, some of them having been relegated to synonymy by previous authors, but as mentioned above I have only been able to recognise four species in Britain and I am not convinced that any other totally distinct Palaearctic species have yet been described. There has not been a revision of the Palaearctic species more recent than that by Czerny (1930) and later authors have followed his interpretation of the specific limits. Two species have been described more recently from the fringes of the Palaearctic Region, i.e. *C. fortunata* (Frey, 1937 (male), 1958 (female)) from Tenerife and *C. coei* (Kessel, 1966 (female)) from Nepal; the single Nepalese specimen from which *C. coei* was described is best treated as Palaearctic, although Kessel & Clopton (1971) included it in their account of the Oriental species. There is no evidence as yet that *Callomyia* species extend beyond the broad limits of the Palaearctic Region in the Old World.

Czerny (*op. cit.*) recognised seven species, five of them (*elegans* Meigen, *leptiformis* Fallén, *speciosa* Meigen, *amoena* Meigen and *dives* Zetterstedt) in both sexes, one (*C. humeralis* Loew) in the male only and the last (*C. elegantula* Wood) in the female only. On close inspection, one finds that Czerny was simply following as far as possible the original descriptions of earlier authors because (as he explained in his introductory notes) he was unable to refute them. In the following notes each of Czerny's species is treated in turn.

C. elegans Meigen (1804) and *C. leptiformis* Fallén (1810)

When Meigen described *C. elegans* he based it on a male with yellow halteres and a female with four pale abdominal bands (two orange and two silver). The male was probably of the same species accepted as British by Verrall in 1912 and of which I have seen several other specimens; Czerny's figure of the hypopygial structure although rather poor probably represents this species, for which I intend to use the name *elegans* Meigen. The female associated with the *elegans* male by both Meigen and Czerny was, however, undoubtedly conspecific not with *elegans* but with the species later described by Meigen (1824) as *C. speciosa*; Czerny did indeed speculate that this might be the case when he found females of this pattern commonly while he had seen very few *elegans* males.

Fallén (1810, 1815) found males similar to Meigen's *elegans* in having yellow halteres and silvery patches on the apical margins of the abdominal tergites

associated with females which had the three anterior abdominal bands divided dorsally into pairs of lunules and described them as *C. leptiformis*. Czerny (*op. cit.*) purported to recognise the male of *leptiformis* as distinct from that of *elegans*, figuring the hypopygial structure of both; the only external difference he cited was the presence of a small silver patch on the side of the second abdominal tergite of *leptiformis*. The silvery areas on the male abdominal tergites of *Callomyia* are, however, variable in extent and sometimes reduced or obscured and can only be used as confirmatory characters. The hypopygia were evidently drawn in situ without dissection as some of the diagnostic features in *elegans* are contracted beneath the abdomen and this has given a false impression of differences, which are probably more apparent than actual. The most obvious difference between these rather inaccurate drawings is the greater length of the exterior forceps in *leptiformis* relative to the tergite but without reference to the specimen from which this was drawn it is difficult to place any value on this distinction.

I am therefore convinced that the *leptiformis* males studied by Czerny were of the same species as his *elegans* and from my study of British material it would appear that Fallén was correct in placing with it the female with divided abdominal bands, which is the true female of *elegans*. It would seem most reasonable, even without reference to type specimens to establish *leptiformis* Fallén as a synonym of *elegans* Meigen as the solution to the problem which has always surrounded the application of these names.

Although doubts have been expressed by some authors about the specific distinctness of the '*leptiformis*' female from those with the anterior bands undivided, the difference seems to be constant and I have seen no specimens which could be regarded as intermediate in this respect. The orange tinting seems always to be restricted to the first pair of lunules but this might not hold good if more extensive material were available. This difference in pattern is most significant when viewed dorsally and is no doubt of quite sufficient specific nature for recognition by the male during courtship. If I am correct in considering this '*leptiformis*' female to be the true female of *elegans*, this suggests closer relationship with *speciosa* than with the other species of the genus. This is confirmed by the genitalic structure in which the parameres of the ninth sternite are simple in both species, the difference in the colour of the halteres then being of secondary importance.

C. speciosa Meigen (1824) and *C. humeralis* Loew (1869)

Verrall (1901) fully characterised *C. speciosa* and it is one of the commonest species in both Britain and Europe. There seems no reason at present to doubt that the sexes have been correctly associated but the originally described female had only the first abdominal band orange tinted and has been distinguished on this character by all subsequent authors from those females agreeing with Meigen's *elegans* in having both anterior bands orange. Furthermore, when Zetterstedt (1838) described his species *dives*, of which the male was a good species dealt with below, he associated with it females which again had a similar abdominal pattern but with all the bands silvery only.

Czerny (*op. cit.*), following these authors, separated the females of his *elegans* and *dives* from *speciosa* on this colour character, but as I have mentioned before (1973) I believe these differences to be of no more than intraspecific variation in the amount of orange tinting on the basically silver abdominal bands. I have examined British specimens which run to each of them in Czerny's key but I am certain they all belong to one species, i.e. the *speciosa* of Verrall (1901). There is a complete range from specimens with hardly any orange tinting except at the

sides of the first band (Czerny's *dives*) to those with the two anterior bands entirely orange (Czerny's *elegans*) but in all cases with basically similar overall pattern. There is usually more orange at the sides of the tergites and I have seen one extreme specimen (Westmorland: Hawes Water, 9.vii.1962, A. Brindle) in the Manchester Museum with the second and third tergites broadly orange at the sides, the third orange at the base and the orange tint also extending onto the sides of the fourth tergite.

The male of *C. speciosa* differs from its female in having darkened halteres so only requires comparison with other males described as having dark halteres, i.e. *C. dives* Zetterstedt (1838), *C. humeralis* Loew (1869) and *C. fortunata* Frey (1937). *C. speciosa* was the first described species with this character and Verrall (1901) wrongly supposed that *C. dives* was only *C. speciosa* with silvery spots on the male abdomen and all the female abdominal bands silvery—he was right only with regard to the female. He did think that *C. humeralis* might be distinct, although it was only separated from *speciosa* by the presence of a large silvery patch behind the humeri on each side of the thorax.

When Frey (1937) described *C. fortunata* he compared it with a species collected by him in Finland, which he believed to be *humeralis* on the basis of the humeral spot. When he later (1958) described the female of *fortunata* he proposed that *humeralis* should be regarded as a synonym of *C. dives*, suggesting that this might regularly have the humeral spot; this was because he had taken with them females having the four abdominal bands all silvery, conforming to Czerny's *dives*. It would appear probable from the characters in which he stated that the *fortunata* male differed from *humeralis* that his *humeralis* male as well as his *humeralis* female belonged not to *dives* but to *speciosa*. It might then be deduced that the *humeralis* of Loew, described from the male only, collected in Hungary, is a synonym not of *dives* as Frey suggested but of *speciosa*. Indeed the original description of *humeralis* agrees very well with typical *speciosa* except for the supposed specific character of the large 'snow-white' spot extending from the shoulder to the suture; it cannot be *dives* because the wings are described as clear glassy, these being distinctly brownish tinted in *dives*.

There are two males (labelled as *humeralis*) collected in Central Europe by Kowarz and now in the Verrall-Collin collection (Oxford Univ. Mus.) and also two males in the British Museum (Nat. Hist.) collection from Herefordshire (Stoke Wood, 8.vii.1905 and Coldborough Park, 27.v.1902; both collected by Dr. J. H. Wood), which have a silvery spot in the position described for *humeralis*. All of these are *speciosa* according to the genitalic structure. Although Czerny (*op. cit.*) recognised *humeralis* as distinct on the humeral spot, he did not figure the hypopygium and I suspect that the type of *humeralis* will be found to agree with *speciosa* in this character. For these reasons I believe *humeralis* Loew should become a synonym of *speciosa* Meigen.

C. amoena Meigen (1824)

This like *C. speciosa* is a common species of which both sexes were characterised by Verrall (1901). Both Verrall and Czerny (*op. cit.*) figured the hypopygium, which differs from the two preceding species in the parameres of the ninth sternite being forked; the halteres are yellow in the male as in *elegans*. The female is very distinct in its abdominal pattern but resembles *speciosa* and *elegans* in its thoracic markings. There appears no reason to doubt that this species has been correctly identified and no synonymic problems require solution.

C. dives Zetterstedt (1838) and *C. elegantula* Wood nec Fallén (1904, 1905)

As stated above some authors have regarded *C. dives* as a synonym of *C. speciosa*, with which the male agrees in the colour of the halteres. I believe, however, that Czerny correctly recognised it as distinct, figuring the genitalic structure; this agrees with *C. amoena* in the forking of the parameres but these are differently shaped and there are other good characters such as the long surstyles. Mr. K. G. V. Smith of the British Museum (Nat. Hist.) has examined the type of *C. dives* and has informed me that the genitalia agree with Czerny's illustration. As discussed above under *C. speciosa*, however, the female associated with the *dives* male by both Zetterstedt and Czerny was not *dives* but a variant of *speciosa*.

It has thus become necessary to identify the true female of *dives* as I am certain no previous author has done this correctly. It is evident that the colour of the halteres is not an important taxonomic character and *C. dives* is not closely related to *C. speciosa*; it is nearer to *C. amoena* although still not very close. One might not, therefore, be surprised to find that its female is also somewhat different. On grounds of British distribution and supported by the features in common with *C. fortunata* discussed below, I have become convinced that the *C. elegantula* of Wood, very distinct from any of the females dealt with above but not previously associated with its male, is the female of *C. dives*. This female has not apparently been described under any other name and was recorded only from Britain by Czerny (*op. cit.*) but it is probable that the male too of *C. dives* has been collected but rarely on the continent, perhaps only in Scandinavia. If my views are correct there is no longer any necessity to provide a new name for Wood's *elegantula* as any such name would become a synonym of *C. dives*.

In my previous paper I mentioned a possible undescribed Scottish species. This supposition was based on two males in the collection of the late Mr. J. E. Collin at Oxford University Museum; I have now re-examined these and find them to be *C. dives* according to the structure of the genitalia. They differ from other males of *C. dives* which I have examined in their larger size and the greater extent of the silvery abdominal markings (*Fig. 9*). The close similarity of the two specimens, from different localities, suggests that they may represent a northern form.

The seven species of *Callomyia* recognised by Czerny (*op. cit.*), assuming the validity of the above remarks, are thus reduced to four, all of which occur in Britain. Before leaving this discussion of the Palaearctic species of the genus it would perhaps be desirable to make some comment on the two species described since Czerny's work, i.e. *C. fortunata* and *C. coei*.

C. fortunata Frey (1937 (male), 1958 (female))

When Frey described this species from a single male collected at Agua Garcia in Tenerife, 11.vii.1931, he compared it with what he supposed to be *C. humeralis* Loew, not mentioning any other species of *Callomyia*. In 1958 he was able to describe the female from material comprising one of each sex collected at Vuelta de Tagañana in Tenerife on 16–17.ii.1950. On the latter occasion he suggested that his *humeralis* was a synonym of *dives* but as I have shown above Frey's material belonged not to *dives* but to *speciosa*. Consequently the differences he cited for *fortunata* serve to distinguish it from *speciosa*, not from *dives*.

The distinguishing characters of *C. fortunata*, however, in all cases correspond to those by which the true *C. dives* is distinguished from *C. speciosa* and it is curious that Frey did not realise this. The close similarity of the *fortunata* female

to that of *elegantula* Wood provides useful confirmation that I have correctly assigned the latter to *C. dives*. The characters in which *dives* and *fortunata* agree with each other but differ from *C. speciosa* may be summarised as follows:

Males: Third antennal joint somewhat longer, $1\frac{1}{2} \times$ long as broad.

Palpi and proboscis yellow (palpi black in *speciosa*).

Abdomen with broad whitish grey side patches on tergites 2 and 4, smaller patches on the hind margins of tergites 3 and 5 (in the extent of these markings *fortunata* apparently agrees more with the Scottish *dives* than with those I have seen from England).

Hypopygium smaller, only as long as broad, with short yellowish appendages (this is not illustrated for *fortunata* but it is extraordinary that Frey had not compared the hypopygial structures of his *fortunata* and *humeralis* with Czerny's quite recognisable drawings of *dives* and *speciosa*).

Wings distinctly brownish yellow tinged, but stigma more intensely yellow (wings less distinctly tinted, only stigma strongly so in *speciosa*).

Females: Thoracic markings are according to the one *fortunata* female I have examined (see below) similar in both *dives* and *fortunata*, although this does not appear from the original description of *fortunata*. In some *dives* the thoracic stripes are almost coalesced to give an impression of the uniform black area found in other *Callomyia* females and described for *fortunata*, but this is always brown rather than black in *dives* and probably in *fortunata* also.

Abdomen with three predominantly silver bands, composed respectively of tergites 1/2, 4 and 6/7; tergites 3 and 5 entirely velvet black (always four separate basically silver bands in *speciosa*).

On this consensus of characters, even without reference to the type specimens it would appear almost certain that *C. fortunata* is conspecific with *C. dives*. Close comparison of the male genitalia would be desirable before reducing *C. fortunata* to synonymy, particularly as I have examined a female of *fortunata* collected in the type locality, which differs from British females of *dives* in some structural features of the head.

I spent the first week of April this year (1973) in Tenerife, when the opportunity was taken to visit the type locality of *fortunata* at Agua Garcia on 6th April. The habitat is an ancient grove of Laurel (*Laurus canariensis*) in a narrow gorge, where running water was present on that date, virtually the only stream I found still flowing on the island. The single female fly was taken when it alighted on laurel foliage in diffuse sunlight three feet above the stream bed and near to some old dried *Stereum* on a log; a second female was observed hovering nearby, its silver markings glinting in a shaft of sunlight, but this eluded capture. Unfortunately no males were obtained. It is to be hoped that suitable habitats for this insect and the other inhabitants of these beautiful old woods continue to survive on Tenerife.

C. fortunata is the only Platypezid to have been collected on the Canary Islands and this family is not known to form a normal component of island faunas, probably because the flies do not usually stray far from their larval habitat. Even if *fortunata* is maintained as a separate form it must have evolved directly from a *C. dives* ancestor and it is perhaps not surprising that some small differences have arisen in a small (?) population, which has been isolated on Tenerife for an unknown period of time. The distribution of *Callomyia* species is very imperfectly known and none have been recorded as far as I am aware from the adjacent parts of North Africa or the Iberian Peninsula so that comparison with material collected in neighbouring regions cannot yet be made.

The females of *fortunata* and *dives* have a very similar thoracic and abdominal pattern (see Fig. 16 of *dives*) but in *dives* the first silver band is distinctly suffused

with yellow on all but less than the middle third and is more strongly yellow tinted at the sides, while in *fortunata* the side margins only are narrowly yellow tinted. The specimen of *fortunata* has the dorsocentral stripes a little broader and more coalescent behind with the narrow acrostichal stripe but this is probably within the normal range of variation of *dives* (eight females examined). There is nothing in the body pattern to suggest that they belong to different species. Frey described the female of *fortunata* as having legs yellow except for grey coxae and last three tarsal joints; this agrees well with *dives* in which there is also a grey dusted band on the apical third of the hind femora. My female of *fortunata* has much darker legs, with hind femora dark on the apical two-thirds and dark shades dorsally on fore and mid femora (the latter only in the apical half); tibiae I and II dark except at base and towards tip and tibiae III dark grey except for the yellow knees; metatarsi darkened apically and the remaining tarsal joints dark. Since Frey did not describe this pattern for *fortunata*, however, it is clear that there can be no specific distinction in the leg colouration.

In the structure and appearance of the head there are differences, which may be more important and I have figured the heads of *fortunata* (Tenerife: Agua Garcia) and *dives* (Surrey: Ranmore Common) for comparison (Figs. 17–18). The chief points of difference are as follows:

(i) Antennae distinctly longer in *dives*, with third joint more elongate, much longer than two basal joints together. Antennae all sooty in *fortunata*, usually distinctly paler on basal joints in *dives*. Arista longer in proportion to the antenna in *fortunata*.

(ii) Frons bluish grey dusted in *dives*, only very faintly browner tinted on orbits, not noticeably darker about base of orbital bristle; ashy grey dusted in *fortunata* with ill-defined browner dusting on orbits, darker about the base of the orbital bristle.

(iii) Orbital bristle midway between front of frons and anterior ocellus or sometimes a little nearer to ocellus in *dives*, about two-thirds length of ocellar bristle; orbital bristle much nearer to anterior ocellus and only a little shorter than ocellar bristle in *fortunata*.

(iv) A very strong externally directed vertical bristle situated on the frons between the lateral ocelli and the eye margins, as strong as the ocellar bristle in *dives*; no vestige of this bristle apparently present in *fortunata*, where its absence is perhaps compensated for by the higher position of the orbital bristles.

The taxonomic significance of these characters cannot be assessed until more material is available from different parts of the species' range, but future work will probably show that *C. fortunata* is at the most a subspecific form of *C. dives*.

C. coei Kessel (1966)

To complete the picture with respect to Palaearctic *Callomyia* some reference should be made to this species, based on a single female collected in Nepal by Mr. R. L. Coe (old mixed forest at 6,200 feet in Taplejung district, 25–28.x.1961). Kessel compared it only with *C. amoena* and the Nearctic species *C. clara* Kessel, both of them having quite different abdominal patterns; he made no reference to *elegantula* Wood, although this had been dealt with by Czerny, perhaps because he supposed the thoracic pattern did not fit.

From Kessel's description, however, it may be seen that *C. coei* agrees entirely with '*elegantula*' (i.e. *dives*) and *fortunata* in the abdominal pattern, differing in the greater development of pale orange tinting, so that this is distinct on all the bands. The detailed description of the chaetotaxy of the head and thorax agrees substantially with *C. dives* and it resembles *dives* rather than *fortunata* in the

possession of distinct vertical bristles and in the silvery grey colouration of the head. The third antennal joint is, however, said to be as long as the first two together, in this agreeing more with *fortunata*. The main point of difference from these other forms appears to be in the thoracic colouration. The thorax is described as silver grey with a broad black stripe down the middle to the posterior margin of the scutellum and with a black area on each side of the mesonotum just above the wing base. I have examined the holotype of *C. coei* in the British Museum (Nat. Hist.) collection and I am inclined to think that the differences from *dives* are only of degree. When further material is available of *C. coei*, it will no doubt like *fortunata* be found to represent no more than a local form of *C. dives*.

THE BRITISH SPECIES OF *CALLOMYIA* MEIGEN

To aid in the determination of the four species now established to occur in the British Isles, I have constructed a fresh key to supercede that included in my previous paper (1973). Separate keys are provided for each sex as before.

Males. The best distinctions are in the genitalia of which the diagnostic features are visible externally. To facilitate identification, therefore, the hypopygium should be deflected while the specimen is relaxed or otherwise it tends to contract into the underside of the abdomen during drying (Figs. 4-7).

The lateral silver to grey markings on the largely black abdomen are useful characters but they are often faint or obscured and do vary somewhat in extent; they cannot therefore be used effectively as primary key characters.

1. Halteres with knobs distinctly darkened. 2.
- Halteres entirely yellow (as in all females). 3.
2. Palpi yellow. Pleura mainly grey dusted in contrast to black dorsum of thorax. Wings strongly brownish yellow tinted. Silver grey patches on abdomen usually more in evidence, larger patches on tergites 2 and 4 sometimes almost meeting in mid-dorsal line, that on tergite 2 sometimes faint; smaller patches close to the apical margins of tergites 3 and 5 (Figs. 8 and 9). Third antennal segment distinctly longer, somewhat conical. Hypopygium smaller with parameres of ninth sternite deeply forked and surstyles long and slender (Fig. 6).

dives Zetterstedt

- Palpi black. Pleura with black reflections. Wings only faintly yellowish tinted or glassy. Silver grey markings on abdomen much less evident, usually only small patches close to apical margins of tergites, most distinct on tergite 3 (Fig. 10). Third antennal segment short oval. Hypopygium very large, distinctly longer than broad, with parameres of ninth sternite very slender, simple and surstyles short (Fig. 5).

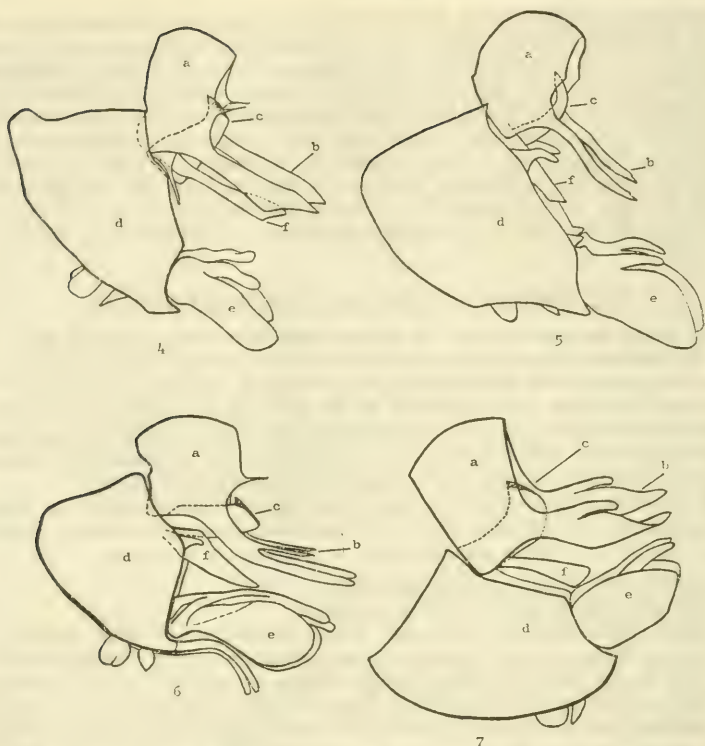
speciosa Meigen

3. A distinct grey dusted presutural area on each side of the thorax. Pale abdominal markings always on the front margins of the tergites, especially distinct on tergites 2 and 5 (Fig. 11). Parameres of the ninth sternite short and broad, shallowly cleft (Fig. 7).

amoena Meigen

- No grey dusted area on the thorax. Pale abdominal markings always on the apical margins of the tergites, especially distinct on tergites 3 and 4 (Fig. 12). Parameres of the ninth sternite more slender although broadened apically in lateral view, but not cleft (Fig. 4).

elegans Meigen

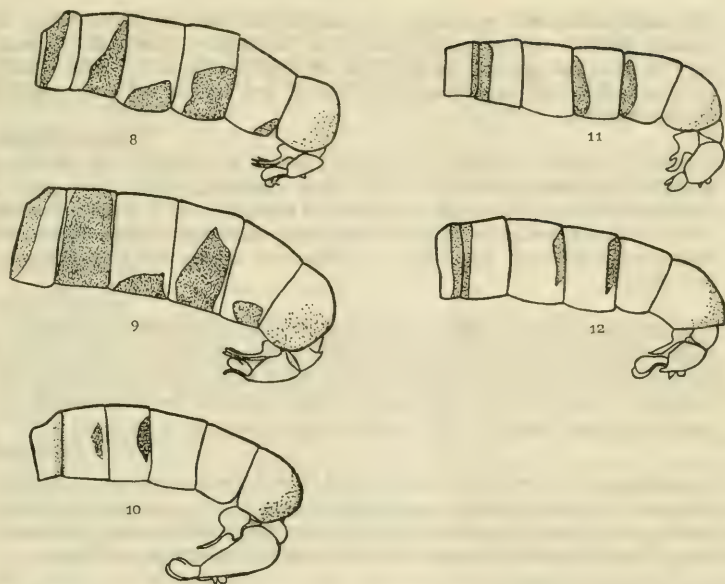


FIGS. 4-7. Lateral views of macerated male hypopygia of *Callomyia* species. 4. *C. elegans* Mg. 5. *C. speciosa* Mg. 6. *C. dives* Zett. 7. *C. amoena* Mg. a = sternite; b = parameres; c = aedeagus; d = tergite; e = exterior forceps; f = interior forceps.

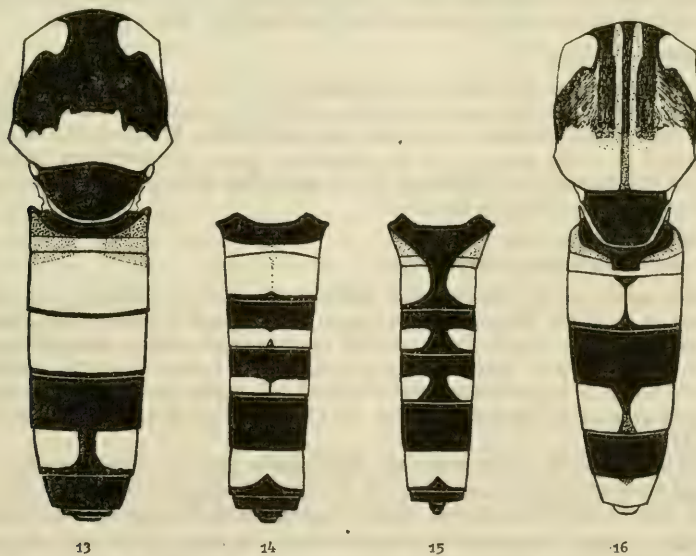
Females. The abdominal pattern is sufficient to identify all of the four species (Figs. 13-16). The thoracic pattern of *C. speciosa* and *C. elegans* is very similar to that illustrated for *C. amoena*, but as may be seen from the figure *C. dives* is somewhat different in this respect.

1. Pale abdominal markings not all nearly occupying entire tergites. A continuous pale band on tergite 6 but three anterior bands, which may be continuous or divided into lunules. 2.
- Pale abdominal markings all occupying nearly entire tergites. Either two or three pale bands but not more than two dark bands. 3.
2. Four nearly entire silvery abdominal bands, with usually the first and sometimes the second orange tinted, the amount of orange tinting varying both in extent and intensity. First band occupies less than apical half of tergite 1 and most of tergite 2; two narrow bands on less than apical halves of tergites 3 and 4, the latter narrowly divided on dorsal mid-line, both bands reaching the side margins; fourth occupies a little over basal two-thirds of tergite 6.

speciosa Meigen



FIGS. 8-12. Lateral views of entire male abdomens of *Callomyia* species. 8. *C. dives* Zett. (southern England). 9. *C. dives* Zett. (Spey Valley, Scotland). 10. *C. speciosa* Mg. 11. *C. amoena* Mg. 12. *C. elegans* Mg.



FIGS. 13-16. Dorsal views of female body markings of *Callomyia* species. 13. *C. amoena* Mg. 14. *C. speciosa* Mg. 15. *C. elegans* Mg. 16. *C. dives* Zett. (the thoracic pattern in *speciosa* and *elegans* resembles that of *amoena*).

- The pattern basically as in *speciosa* except that the first three bands are broadly divided on the middle quarter of the tergites into paired lunules; only the first pair orange tinted; those on tergites 3 and 4 broader than in *speciosa*, occupying more than apical half of tergites but not quite reaching the side margins.

elegans Meigen

3. Tergites 1-3 mainly orange, but tergite 1 brown at the base and lunules of silver frosting covering sides of tergite 1 and extending a little onto tergite 2; narrow black bands on posterior margins of tergites 2 and 3. Tergite 5 mainly silver except for irregular black median stripe widening apically. Remaining tergites entirely black. Black area on silver grey thorax entire as in *speciosa* and *elegans*.

amoena Meigen

- Tergites 3 and 5 entirely black; remaining tergites mainly silver, with tergite 1 black at the base and narrow black median stripes on tergites 2 and 4 more or less distinct. Dark area on thorax brown rather than black and more or less distinctly divided by ill-defined paler stripes between the dorsocentral and acrostichal rows, leaving a dark median stripe along the acrostichal row.

dives Zetterstedt

C. speciosa and *C. amoena* are both well known species and are of frequent occurrence. The two remaining species are much scarcer and rather local but still widely distributed. *C. elegans* has not been collected in recent years in this country. The British distribution of the four species is summarised below.

C. speciosa Meigen 1824

C. humeralis Loew 1869 syn. nov.

I have examined 184 males and 144 females of this species from all parts of Britain (thirty-eight vice-counties) as far north as the south coast of Sutherland. The only Irish material was collected by Haliday (Nat. Mus., Dublin).

C. amoena Meigen 1824

I have examined 141 males and 100 females of this species from all parts of Britain (thirty-nine vice-counties) as far north as the south coast of Sutherland and from a few localities in Ireland (in Cos. Dublin, Wicklow, Galway and Donegal). It would appear to be the commoner species in many areas, although *C. speciosa* may be locally abundant and is more often taken in numbers, accounting for the greater total of specimens.

C. elegans Meigen 1804

C. leptiformis Fallén 1810 syn. nov.

This species appears to be rather scarce in this country although it has been found in England, Wales, Scotland (just) and Ireland. It appears on present information to be usually found near the coast in south-western districts in each of the four countries, only the Hereford and Brecon records being far inland. It is also scarce in Europe according to Czerny but I took one male in an upland pasture fringed by birchwoods near the Col de Tribes (Lozère) in France on 1st May 1971.

Of British origin I have only seen eleven males and five females, mostly collected more than sixty years ago; the most recent specimen was taken by Mr. R. L. Coe in 1960 in the west of Ireland. Full details of this material is as follows:

Males: **Dorset**: Glanville's Wootton, 6.vi.1861 (1); viii.1890 (1) (C. W. Dale collection, Oxford Univ. Mus.). **Hants**: New Forest, Lyndhurst, 21.vi.1903 (1); 16-24.vi.1903 (1)

(F. Jenkinson, Cambridge Univ. Mus.). **Glamorgan**: Porthcawl, 29.vi.1903 (1), 4.vii.1906 (2); Pyle, 31.vii.1908 (1) (Col. J. W. Yerbury; all 4 in J. E. Collin collection, Oxford Univ. Mus.). 'British' (1) (no other data; A. H. Haliday collection, Nat. Mus. Dublin). **Waterford**: Tramore, 27.vii.-1.viii.1918 (1) (R. F. Scharff, Nat. Mus. Dublin). **Clare**: Ballyvaughan, Lough Rask, 3-8.viii.1960, hovering in a gale at the end of sycamore branches (1) (R. L. Coe, British Mus. (Nat. Hist.)).

Females: **Hants**: New Forest, 28.viii.-9.ix.1901 (1) (D. Sharp, Cambridge Univ. Mus.). **Heref**: Stoke Edith Wood, 22.viii.1912 (1) (Dr. J. H. Wood, British Mus. (Nat. Hist.)). **Brecon**: Llangammarch, 10.viii.1913 (1) (J. E. Collin, Oxford Univ. Mus.). **Dumfries**: Gretna, 12.viii.1940 (1) (? collector, J. E. Collin collection, Oxford Univ. Mus.). **Galway**: Galway (1) (A. H. Haliday collection, Nat. Mus. Dublin).

C. dives Zetterstedt 1838

C. elegantula Wood 1904 nec Fallén 1815 syn. nov.

It is difficult to decide whether this or *C. elegans* should be regarded as the scarcest British *Callomyia* but it has at least been collected in recent years. As discussed above I am now certain that *dives* and *elegantula* are the two sexes of one and the same species, although they have never been found in the same locality.

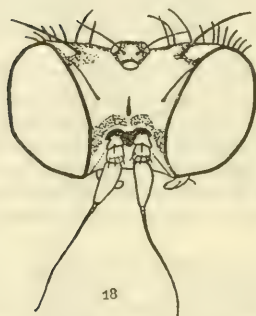
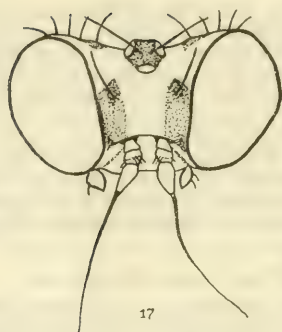
I have seen seven males and eight females (two males and one female collected myself) but all of them found singly in different localities. It is widely distributed in Great Britain with a scattering of records across southern England and again in the Spey Valley in Scotland, but has not been found in Wales or Ireland. I was surprised to find that the specimen of '*leptiformis*' mentioned by Verrall as taken by the elder Dale at Leigh Woods in 1845, still survives in good condition and is this species; Verrall placed the record under *amoena* but had obviously not seen the specimen.

Males: **Heref**: Tarrington, 14.v.1898 (J. W. Yerbury; J. E. Collin collection, Oxford Univ. Mus.). **Gloucs**: Ashwell Grove, 25.vi.1972, in shady copse, swept by small stream near trees bearing old dried *Coriulus* but no suitable larval development media found (P. J. Chandler). **Cambs**: Woodditton Wood, 16.vii.1944 (J. E. Collin, Oxford Univ. Mus.). **Oxon**: Middleton Stoney, 19.v.1963 (A. C. Pont, British Mus. (Nat. Hist.)). Bix Bottom C. N. T. Reserve, 9.vii.1972, alighting on a sunlit hazel leaf near fungus bearing logs in the vicinity of which both sexes of *C. amoena* and *C. speciosa* have been taken, but searches for larvae so far proved negative (P. J. Chandler). **Moray**: Grantown, 23.vi.1937. **Inverness**: Loch Garten, 24.vi.1963 (J. E. Collin, Oxford Univ. Mus.).

Females: **Heref**: Coldborough Park, 23.v.1904; Longtown, 24.vi.1904; Stoke Edith Wood, 11.viii.1905 (Dr. J. H. Wood, British Mus. (Nat. Hist.)). **Somerset**: Leigh Woods, 20.v.1845 (Dale collection, Oxford Univ. Mus., date on label 20 not 25). **E. Suff**: Butley, 1.vi.1952 (L. Parmenter). **Oxon**: Waterperry Wood, 6.vi.1926 (J. Collins, in J. E. Collin collection, Oxford Univ. Mus.). **Surrey**: Ranmore Common, 29.vii.1951 (L. Parmenter). **Kent**: Longrope Wood, Ham Street, 17.vi.1973, swept from bushes by a woodland pond (P. J. Chandler) (the latter record provides an addition to the Kentish fauna of this family (Chandler, 1973), bringing the county list to twenty-two).

GENUS AGATHOMYIA VERRALL

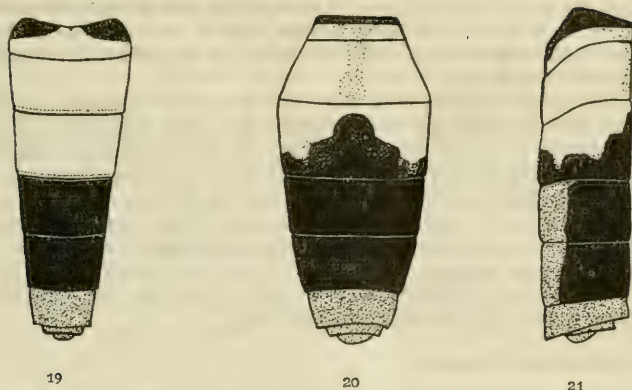
I referred previously (*op. cit.*) to some changes which have been found necessary in the British list of this genus, i.e. the substitution of the name *unicolor* Oldenberg for the *zetterstedti* (Wahlberg in Zetterstedt) of our list and the probability that the supposed female of Wood's *elegantula* (Fallén) was *cinerea* Zetterstedt, this hypothesis being based on the description of Lundbeck (1927) who was followed by Czerny (1930). Some comment should first be made on these species before adding yet another species of *Agathomyia* to the British list.



FIGS. 17-18. Dorsal views of the female heads of *Callomyia* species. 17. *C. fortunata* Frey. 18. *C. dives* Zett.

Agathomyia unicolor Oldenberg and *A. zetterstedti* (Wahlberg in Zetterstedt)

There is no doubt that our *zetterstedti* of Wood is *unicolor* Oldenberg, which as far as can be ascertained from the original description of *zetterstedti* (Zetterstedt, 1844) is not the same as that species, described from a single female specimen. This female had the thorax mainly grey and the abdomen predominantly orange (tergites 1-3 orange; 4 orange with black lateral spots; 5 grey, black median and lateral areas on apical margin; remaining tergites grey). If this abdominal pattern is constant and specific then *zetterstedti* is a good species belonging to the group with zoned female abdomens, which includes all remaining species to be discussed here. *A. unicolor*, on the contrary, although somewhat variable in the extent of yellow, brown and grey on the abdomen, never has differently coloured zones. There is, however, some confusion regarding the male characters of *zetterstedti*; in 1852, Zetterstedt briefly mentioned the male as being entirely black (as it indeed is in *unicolor*) but Wahlgren (1910) keyed it as having the abdomen widely orange at the base (more extensively than it is in the male of *elegantula*) and was followed in this by Czerny. The status of *zetterstedti* must therefore remain uncertain at present.



19

20

21

FIGS. 19–21. Female abdominal patterns of *Agathomyia* species. 19. *A. elegantula* Fall. 20. *A. boreella* Zett., dorsal view. 21. *A. boreella*, lateral view.

A. elegantula (Fallén) and *A. cinerea* (Zetterstedt)

Even though Wood's male of his *elegantula* agreed with Fallén's description of the male of his species, this was originally described from a female specimen, which had the thoracic disc velvet black and so was obviously not the same as the female associated with this male by Wood. The true female of *A. elegantula* was not distinguished from that of *A. boreella* (Zetterstedt) by Wahlgren (1910a and b) or Czerny (1930) but was later recognised by Szilady (1941). I have seen two British specimens which agree with Szilady's description and which differ from the British material of *A. boreella* in having the anterior three abdominal tergites entirely orange (excepting the base of tergite 1), while *boreella* has an ill-defined dark area on the apical margin of the third tergite, with an irregular anterior edge (Figs. 19–21). Both species have the disc of the mesonotum velvet black with narrow grey stripes along the lines of the bristles and grey dusting laterally and posteriorly, so differing from the female which Wood associated with the *elegantula* males, this having no velvet black colouration on the thorax.

As indicated above, Wood's female of his *elegantula* is undoubtedly the same as that described by Lundbeck (1927) as *cinerea* (Zetterstedt). The original description of *cinerea* from a single female specimen (Zetterstedt, 1852) was, however, a little different, as was mentioned by Lundbeck (*op. cit.*). Zetterstedt said that abdominal segments 1 and 2 were yellowish grey with a darker dorsal vitta; 3 and 4 with broad black bands; 5 grey with a narrow black band and the remainder grey. Wahlgren (1910a and b) followed Zetterstedt in this description and he also gave the male characters, again not mentioning how the sexes were associated. Lundbeck, however, stated that the single female available to him had the first three tergites yellow, only the fourth entirely black, the fifth and sixth greyish (a little silvery), but the fifth black laterally.

It is the latter description which fits the three females treated as *elegantula* by Wood and dealt with here as *cinerea*, following Lundbeck. Whether *cinerea* of Lundbeck is really conspecific with *cinerea* of Zetterstedt and Wahlgren cannot yet be determined and Lundbeck said that he could not find the type in Zetterstedt's collection, it having been collected by Holmgren. If Wahlgren correctly

recognised the male, which was said to have yellow side patches, not connected dorsally, on the first three abdominal tergites, then *A. cinerea* cannot be the same species as *A. biseta* Oldenberg, dealt with below, as the male of that species has the abdomen entirely black.

The three species just discussed then have in common a zoned abdomen in the female with orange at the base separated by a black area from grey dusted apical segments, in which they differ from the other species of *Agathomyia* recorded from Britain; they also have rather short antennae whereas these are elongate in the more typical members of this genus. During my examination of the Platypozidae in the major Museum collections a further specimen with this type of abdominal colouration has come to light; although it resembles *A. cinerea* of Lundbeck in most respects, it has less yellow on the abdomen. It does, however, fit the description of *A. biseta* Oldenberg and I here take the opportunity of adding it to the British list under the latter name.

Agathomyia biseta Oldenberg

The addition of this to our list is on the strength of but a single female specimen in the Cambridge University Museum, taken by Mr. F. Jenkinson at Logie in Elgin on 16th September 1904. Although the specimen is rather faded and the pin supporting it badly corroded there appears to be little doubt that it belongs to this species and according to a hand-written label on the specimen and a note in his own collection the late Mr. J. E. Collin was of the same opinion.

Oldenberg (1928) described *A. biseta* from four specimens of both sexes collected at three localities in Germany, all in September, and including a copulating pair which enabled the sexes to be correctly associated. The species displays the characteristic difference in the body colouration of the sexes found in this genus. The male is all black and it was briefly compared with those of *A. antennata* (Zetterstedt) and *A. boreella* (Zetterstedt). It is distinguished from the other entirely black *Agathomyia* males by the chaetotaxy of the legs; there are no bristles on the shaft of the mid tibiae so that it only requires comparison with *A. collini* Verrall and those specimens of *boreella* which lack a distinct mid-tibial bristle. *A. collini* has a single bristle on the mid-metatarsi while two distinct bristles are present in *A. biseta*, one near the middle and another near the base; *A. boreella* appears less distinct in this respect as sometimes only two distinct bristles are present, sometimes a third between them and it would be useful to have specimens for comparison of the genitalia and other important features which are omitted from the original description.

The female is, however, easily recognised although similar in overall pattern of markings to those of *A. boreella*, *A. elegantula* and *A. cinerea* as treated above. It is closest to *A. cinerea* but is best treated as distinct on present evidence. The British example agrees substantially with Oldenberg's description and the following expanded description is based on my examination of this specimen. The abdominal zoning with only the two basal tergites yellow, the tergites 3 and 4 darkened and the remainder ashy grey is characteristic:

Females: Head grey with yellow ocelli and red eyes. Antennae yellow; third antennal segment $2\frac{1}{2} \times$ length of second, $1\frac{1}{2} \times$ length of two basal segments together. Arista $1\frac{1}{2} \times$ length of antenna.

Thorax ashy grey, darker than tip of abdomen and with ill-defined darker markings; a pair of longitudinal stripes between the rows of bristles stopping short by a third of mesonotal length from the scutellum; broader ill-defined dark areas outside the dorsocentral rows, extending a short distance further back than the stripes. Sides of mesonotum, pleura, scutellum and prescutellar area all light grey but humeri, postalar

calli and parts of pleura (especially along sutures) yellow; humeri somewhat darkened anteriorly.

Acrostichals and dorsocentrals uniserial. Six strong notopleurals on each side and five strong bristles arranged irregularly between these and the dorsocentrals. Four bristles of varying strength on the humerus. Four strong scutellars. Halteres yellow.

Abdomen with two basal segments pale yellow with a silver sheen. Long yellow hair on most of the basal segment and the sides of the second segment. A few short black bristles in the middle of the second tergite, the remaining tergites all covered with short black bristles but lacking any long hair. Third and fourth tergites appearing dark orange brown in this specimen but probably more velvet brown (as described for the German specimens) in life, lacking the silver sheen of the other tergites. The whole of the fifth and sixth tergites and ovipositor ashy grey with a silver sheen. Cerci fairly narrow, elongate oval in lateral view.

Legs including coxae and trochanters entirely yellow; hind tibiae broadened apically; hind metatarsi rather broad, as broad as the broadest part of the tibiae.

Wing faintly yellowish tinged with yellow veins. Portion of fifth vein (M3+4) beyond posterior cross-vein (m) about four-fifths of the length of m. Portion of fourth vein (M1+2) beyond m equal to $2\frac{1}{2} \times$ length of m.

As no males of either *A. cinerea* or *A. biseta* have yet been found in Britain it is not possible to incorporate these adequately into my key. At present the key I previously offered can only be supplemented by a table of the females of these species with zoned abdomens. I believe that these represent four quite distinct species and that their abdominal pattern will be found to be constant and highly specific as it is in *Callomyia*, towards which this group of *Agathomyia* tends in the type of marking.

1. Disc of mesonotum velvet black, light grey dusted at the sides and on narrow stripes along the dorsocentral and acrostichal rows. All abdominal hairs and bristles dark. 2.
- Thorax without any velvet black colouration, entirely grey or brown dusted. Long yellow hair at base of abdomen. 3.
2. Abdomen with basal three tergites entirely orange; fourth and fifth tergites black; sixth tergite grey dusted. Posterior cross-vein less than its length removed from wing margin on fifth vein.

elegantula (Fallén)

- Abdomen with similar colouration except that the black band comprising the fourth and fifth tergites extends onto the hind margin of the third tergite so that the orange-yellow basal area is not so clearly defined. Posterior cross-vein usually more than its length removed from wing margin on fifth vein.

borella (Zetterstedt)

3. Abdomen with basal two tergites yellow; third and fourth velvet brown; remainder entirely grey dusted. Thorax ashy grey with vague darker stripes. Antennae yellow.

biseta Oldenberg

- Abdomen with basal three tergites orange; fourth black; the remainder grey dusted except that fifth tergite is only dusted dorsally. Thorax more brownish grey in front, lighter grey at sides and behind. Antennae black.

cinerea (Zetterstedt)

The British material of these species known to me is very limited and their extreme rarity has been responsible for the taxonomic difficulty still surrounding them. Apart from the single specimen of *A. biseta*, the following have been examined.

A. elegantula (Fallén)

The male of this species is very distinct owing to the orange abdominal band occupying the whole of tergite 2 and all but a black dorsal line of the third tergite. The females listed here appear to be this species rather than *boreella* with which they might easily be confused.

Males: **Heref**: Stoke Edith Wood, 19.ix.1908; 6.ix.1910; 7.viii.1912 (Dr. J. H. Wood; Brit. Mus.). **Kent**: Farningham, 1.ix.1923; Chislehurst, Scadbury, 15.ix.1928 (H. W. Andrews; in J. E. Collin colln., Oxford Museum). **Notts**: Sherwood Forest, 22-24.ix.1922 (Dr. F. W. Edwards; Brit. Mus.).

Females: **Heref**: Stoke Edith Wood, 21.ix.1905 (Dr. J. H. Wood; Brit. Mus.). **Hants**: Lockford Estate, 3.x.1971, beaten from shrubs in beech wood, immediately outside garden of Atners Tower (P. J. Chandler).

A. cinerea (Zetterstedt) sensu Lundbeck

I am accepting this as a British species on the basis of the few female specimens collected by Dr. J. H. Wood, including the one originally associated by him with the first captured male of *A. elegantula* when he added that species to the British list (Wood, 1910) and a fourth specimen in the Dale collection. It was not taken on the same date as *elegantula* but was associated because of locality and colouration, the female mentioned above under *elegantula* being identified by him as *boreella* but the latter species was not collected in Stoke Wood.

Females: **Heref**: Stoke Edith Wood, 16.ix.1912; 14.x.1905; 18.x.1909 (Dr. J. H. Wood; Brit. Mus.). **Dorset**: Glanville's Wootton, 16.ix.1900 (C. W. Dale; Oxford Museum).

A. boreella (Zetterstedt)

The male differs from the above two species in the entirely black body (*A. cinerea* is said to have yellow side patches on the first three abdominal tergites) but the females are very similar to those of *elegantula*.

Males: **Heref**: Shobdon Marsh, 13.vii.1904 (2); 3.viii.1904 (2); 18.viii.1904 (1) (Dr. J. H. Wood; Brit. Mus. and J. E. Collin colln. at Oxford Museum). Cowborough Park, 27.v.1902 (1) (mounted with *antennata*, Dr. J. H. Wood; Brit. Mus.).

Females: **Heref**: Shobdon Marsh, 9.vii.1904 (2); 13.vii.1904 (3); 3.viii.1904 (1); 18.viii.1904 (1). Cowborough Park, 20.viii.1906 (1) (Dr. J. H. Wood; Brit. Mus. & J. E. Collin colln., Oxford Museum).

I have visited both Stoke Edith Wood and Shobdon Marsh to search for their respective *Agathomyia* specialities but both localities appear to have deteriorated somewhat since Wood's day, especially Stoke Wood which was his most productive Platyppezid hunting ground (he took twenty species there)—much of the wood has been felled and the remnants consist largely of chestnut coppice; I did, however, take five species of Platyppezidae on my visit there on 23.ix.1972, two of them (the *Microsania* species mentioned above) additions to Wood's Herefordshire list and *Agathomyia unicolor* was among them (first recorded as British from this locality by Wood, 1910). The tangled wood on Shobdon Marsh in which a number of springs arise still resembled Wood's (1905) description of it when I went there on 29.vii.1973 but it is closely encroached upon by an airfield on one side and chicken houses on the other, with refuse piled up at the margins. The flies I sought were not found but both visits were during dry periods with little fresh fungal growth providing suitable development media so their survival in those parts is not excluded. None of the species in this group of *Agathomyia* have yet been reared but it is presumed that they attack Polypores or other fungi growing on wood. Their scarcity may be tied up with their life history and fresh

information on them would be very welcome. Repeated searching in the wood where I took the solitary female of *A. elegantula* in 1971 has failed to reveal any further examples, either adults or early stages.

Agathomyia is a large genus and in addition to the nine species I have now accepted as British there appear to be at least a further seven in the European fauna. Because of the rare occurrence of most species and the sexual difference in colour being as great as in *Callomyia* it is possible that the association of the sexes in the different species may yet require some further revision, although this appears to have been done correctly in most cases. As I suggested in my previous paper, there are undoubtedly some natural groups, which in the future might be raised to generic status but familiarity with all the European species or preferably a wider fauna still would be desirable before any attempt at division be made. It is first essential that the specific limits should be well established.

As alluded to under *Callomyia*, the female patterns are probably important for specific recognition during courtship. The five British *Agathomyia* not treated above are rather different in colouration from the 'zoned' species. Their patterns fall into three distinct types:

- (1) Abdomen black with paler markings (grey in *antennata* (Zetterstedt) or silver in *collini* Verrall).
- (2) Abdomen entirely black like thorax but the highly polished metallic violet-blue frons compensates for this in *viduella* (Zetterstedt).
- (3) Brownish yellow ground colour with more or less distinct darker markings in *unicolor* Oldenberg or brownish orange with dark brown fasciae in *falleni* (Zetterstedt).

The males of *Agathomyia* are predominantly black like those of *Callomyia* and they lack the silvery patches characteristic of the latter genus. In the British fauna only *A. falleni*, *A. elegantula* and *A. cinerea* (male of last not yet taken in this country) depart from this hue and only *A. falleni* closely resembles its female in colouration. The entirely black species have hitherto only been separated by structural and chaetotactic differences in the legs and in the proportions of the antennal components. The work of Kessel & Maggioncalda (*op. cit.*) has shown that the male genitalia are highly characteristic as in other Platypezidae but they exhibit a wide range of morphology in the few species examined by them, tending to confirm the view that future splitting of the genus would be desirable using a combination of external and genitalic characters. No detailed work has yet been done on the genitalia of Palaearctic *Agathomyia* and the limited material available for study of most species has so far precluded the full use of these characters. This important work should, however, be a future priority.

GENUS *SERI* KESSEL & KESSEL

I am adding this genus to the British fauna on but three specimens, which belong to the species described under the name *Clythia* (= *Platypeza*) *obscuripennis* by Oldenberg (1916). For this interesting discovery we have to thank Dr. E. Burt, who collected one fly, a female, on Wokefield Common, Berks., on 4.x.1970. I found this specimen among undetermined Platypezidae deposited in the Reading Museum. More recently, I have seen two further females collected by Mr. A. E. Stubbs at the Sheep Leas, West Horsley, Surrey on 12.ix.71.

Although in rather poor condition, slightly greasy, with a distorted abdomen and lacking hind legs, Dr. Burt's fly ran down easily in the keys of Czerny (1930) to *obscuripennis*, being distinguished most obviously from the females of all other British Platypezinae by the brownish tinted wings, supported by the

grey dusted body lacking any pattern of velvet black markings and unique features in the venation. It is indeed curious that this fly should not have been collected here before, although in the field it could easily be mistaken for a small obscure Muscid as was suggested by Kessel & Kessel (1966) for the American species of *Seri*, which they would have passed by until it exhibited the characteristic erratic movements of the Platypezidae. Nevertheless one might have expected the collectors of obscure Muscidae, including myself, to have turned it up.

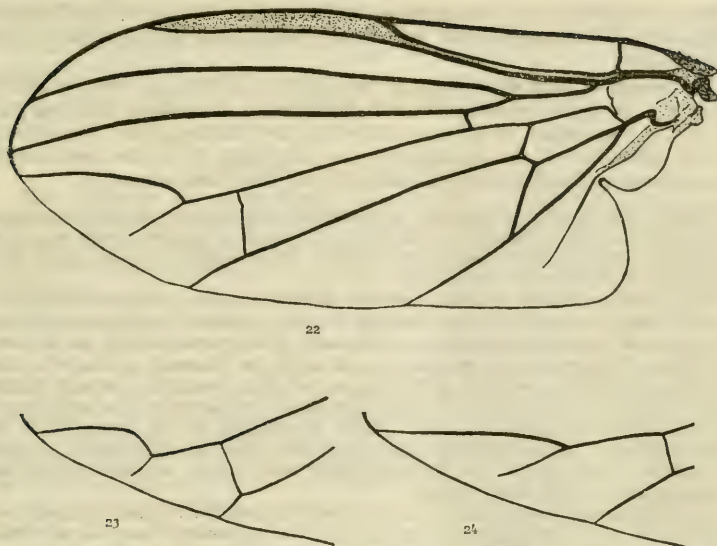
The genus *Seri* was described by Kessel & Kessel (*op. cit.*) for one species, *dymka* Kessel; it was separated from the then composite genus *Platypeza* by an important venational character, i.e. the median fork occurs closer to the posterior cross-vein than to the wing margin. *S. dymka* was originally described (Kessel, 1961) on four females, while a further 15 females were recorded in 1966; the male apparently remains unknown. Although evidently rare *dymka* is now known to occur throughout western North America, from Alaska and the Yukon Territory to California and Idaho. In their generic revision, Kessel & Maggioncalda (1968) maintained *Seri* as a monotypic genus, but *Platypeza obscuripennis* (Oldenberg) was not among the European species assigned by them to any of their taxa, probably because they only thought it right to include those species which had been fully characterised by Verrall (1901).

The generic and specific characters of *S. dymka* apply very well to *obscuripennis* and there is no doubt that it should be correctly placed here. Without material for comparison and in the absence of any opportunity to examine males of either species it is best to maintain them as separate species as in all cases where American Platypezids were first identified with European species they have subsequently been found to be specifically distinct. Kessel described *dymka* as being entirely 'smoke-coloured bluish grey, hence the name' while the female of *obscuripennis*, although entirely grey dusted, does not exhibit such a bluish appearance; also the antennae of *dymka* are said to be yellowish brown and those of *obscuripennis* are entirely blackish. The yellow and grey-brown colouration of the legs in the British specimen may also apply to *dymka* but Kessel's description is ambiguous on the leg colour, possibly due to a printer's error. Also the wing of *dymka* illustrated by Kessel & Maggioncalda (*op. cit.*) shows the lower branch of the median fork (which ends free in both species) as being distinctly longer than the preceding section of the fourth vein, but in the British specimens of *obscuripennis* these sections are more nearly equal, the free branch being only slightly longer, but still fulfilling the generic character because of the separation of the tip of the fourth vein from the wing margin.

Seri obscuripennis (Oldenberg) nov. comb.

Oldenberg (1916) described both sexes of this species rather fully, without figures. His description was drawn up from four males and two females collected in June, July and September in Austria and Switzerland. The sexes, although not found together, held in common the important specific characters of the venation and tinting of the wings and there seems little doubt that they were correctly associated.

In my key to the British species (1973) both sexes would run to *Paraplatypeza atra* (Meigen), agreeing with the genus *Paraplatypeza* in the following characters: (i) the anal cell relatively short—only slightly longer than the succeeding portion of the anal vein in *obscuripennis*; (ii) the posterior cross-vein (m) distinctly less than its length removed from the wing margin on the fifth vein; (iii) the third segment of the posterior tarsus the longest; (iv) the anterior cross-vein (r-m) at a level corresponding to little more than two-thirds of the distance from the base to



FIGS. 22-24. Wing of *Seri obscuripennis* Old. female (22) with, for comparison, median fork and posterior cross-vein of *Paraplatypeza atra* Mg. (23) and *Orthovena furcata* Fall. (24).

the tip of the second costal cell ($r-m$ is erect in *Paraplatypeza* but in *Seri* is inclined diagonally so that an extension cuts the cell at five-sixths of its length). *S. obscuripennis* also agrees with *P. atra* but differs from all other British genera of Platypezinae in having three strong notopleurals; there are only two in *Protoclythia* and always four or more in the other genera.

Seri does, however, differ from *Paraplatypeza* and from all other Platypezinae in having the upper branch of the median fork (M_1) meeting the fourth vein nearer to the posterior cross-vein than to the wing margin. For this reason the genus was proposed by Kessel & Kessel (*op. cit.*) prior to the more detailed generic revision of Kessel & Maggioncalda (*op. cit.*) and these authors noted that the venation tended more towards that of the Platypezinae genera *Platypezina* and *Grossoseta* (neither found in Britain) but these latter genera have the fork much closer to the cross-vein and possess acrostichal bristles combined with the characteristic slender-bodied sub-familiar facies. *Seri* is in most other respects a typical member of the Platypezinae, but it differs from all other British genera in the lengths of its second and third costal cells being subequal; in the rest the third cell is distinctly longer.

The characteristic venation of *S. obscuripennis* is shown in the figure, drawn from the British specimens (Fig. 22). For comparison of the relative positions of the posterior cross-vein and median fork this portion of the wing is illustrated also for *Paraplatypeza atra* and *Orthovena furcata*. The latter species is included because the female of *obscuripennis* is superficially similar to it in the completely grey body and tinted wings. *O. furcata* differs, however, apart from the venational characters in the brownish grey frosting of the body providing a definite sheen

(lighter and dull grey in *obscuripennis*) and in the greyish rather than brownish wings. *P. atra* is almost entirely velvet black bodied with glassy untinted wings in both sexes.

The following brief description of the female is drawn up from the British specimens. It agrees substantially with Oldenberg's description, differing most noticeably with regard to the legs. According to Oldenberg these are yellowish brown, although with darker reflections in some lights. As he does not mention the colouration described here his material may have been immature.

Females: Frons and face light grey, with blackish ground colour showing through on frons. Antenna short, blackish; arista dark, $2\frac{1}{2} \times$ length of antenna, with very short pubescence. Proboscis and palpi dusky yellow. Head bristles all black, many short irregularly dispersed bristles on frons.

Body short and plump; entirely light grey dusted except for yellowish sutures and adjacent areas on the pleura; grey dusting on parts of pleura thin, exposing shining black ground. Dorsocentrals uniserial, increasing in length posteriorly, last bristle in row outset. Three strong notopleurals in a straight line diagonal to the wing base. Between notopleurals and dorsocentrals a group of short irregularly arranged bristles, one of them (immediately above notopleura) almost as strong as the notopleurals; a similar group of slightly stronger bristles culminating in one strong supra-alar behind the suture. A strong bristle on postalar callus. Four strong scutellars. Abdominal bristling short, black. Two pairs of strong black bristles on pregenital sternite. Ovipositor short, cerci dusky yellow.

Legs: coxae grey dusted, front coxae yellowish externally. Femora predominantly dark brown, grey frosted although becoming yellowish towards base and tip. Tibiae with basal quarter to third clear yellow, remainder coloured as femora but with yellow reflections. Tarsi entirely yellow, apical two joints slightly brownish. Leg bristling all short, black except on broadened internal face of basal three hind tarsal joints, thickly clothed with longer yellow hair. Front tibiae with a series of short yellow spines situated internally at the tip; mid tibiae with a strong black internal apical spur, $1\frac{1}{2} \times$ long as apical width of tibia. Hind legs with tibiae broadened apically and tarsi greatly broadened, of the typical platypezine form with the third joint the longest, especially on its anterior margin where the second joint is constricted; both third and fourth joints excavated externally.

Wing: venation as in Fig. 22. Entire wing faintly but distinctly yellowish brown tinted with brownish yellow veins, clearer yellow at wing-base. Subcostal cell darker tinted. Squamae yellowish with a narrow brown margin; fringe yellow. Halteres entirely clear yellow. Body length 3–3.5 mm.; wing length 4 mm.

Material examined: 1 female, **Berks**: Wokefield Common, 4.x.1970, SU647 660, near 'old site of Three Firs' (Dr. E. Burt; Reading Museum colln.); 2 females, **Surrey**: Sheep Leas, Horsley, 12.ix.1971 (A. E. Stubbs).

In the absence of actual male specimens for reference I have condensed Oldenberg's description to draw attention to the salient features:

Males: Eyes in contact for distance equal to the length of the frons. Frons and face deep black; the frons bristly, the bristles on the lower part fully as long as the antenna, without the arista. A long hair tuft on the ocellar triangle. Thick bristling of the cheeks a little shorter than that of the frons, merging behind with the longer bristling of the occiput. Antennae dark brown, the tips of the joints sometimes paler; long dark arista.

Body with bristling generally stronger than in the female. Thorax velvet black, with greyish brown dusting laterally; strongly bristled. Dorsocentrals long. Scutellum velvet black, with four marginal bristles, the strong apicals widely separated. Squamae dark brown with brownish hairing. Halteres dark brown. Abdomen velvet black with very narrow paler hind margins to the tergites. The bristling is long and black. Venter brownish.

Legs dark brown to almost black, with paler reflections, especially on the knees and

front tarsi. Fore and mid femora with long thick dorsal hair; hind femora postero-dorsally with shorter finer hairing. Hind tibiae moderately and hind tarsi broadly widened, the third tarsal segment the longest. General leg hair short and thick. Claws and pulvilli moderately large.

Wings vivid yellowish brown to dark brown tinted (more so than in female); subcostal cell darker and costal cell paler.

GENUS *PLATYPEZA* MEIGEN

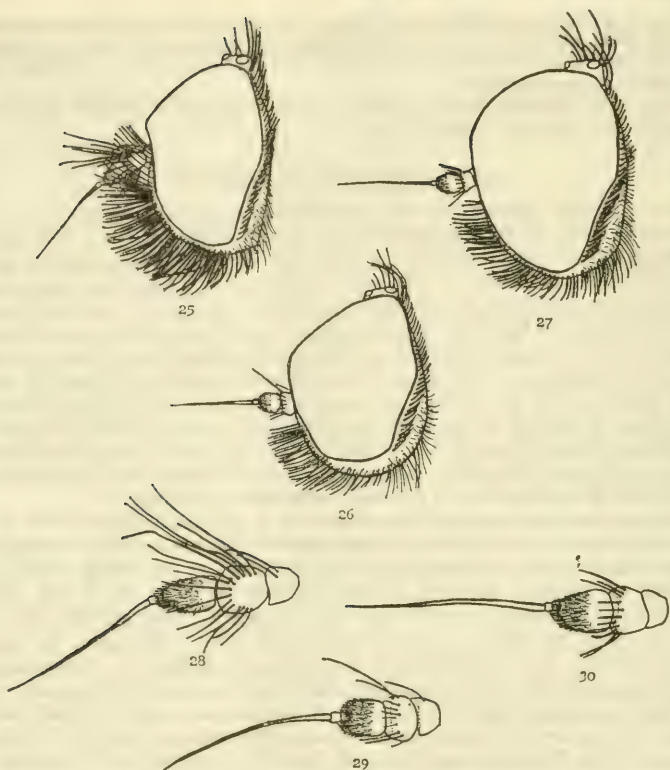
This is another genus which was mentioned as requiring revision in my last paper (Chandler, 1973). The name *Platypeza* is now restricted to a well-defined species group, of which there have hitherto been three species recognised in this country. All the species are closely similar to each other in superficial appearance. The males are mainly black with dense bristling on the face but no tuft of bristles at the top angle of the frons. The females are mainly brownish grey with black fasciae on the abdomen. Both sexes differ on important venational characters from other segregates of the genus *Platypeza* as originally constituted. *P. consobrina* Zetterstedt is very distinct in having a short anal cell not longer than the subsequent portion of the anal vein but the other species, in which the anal cell is distinctly longer (although not as long as in *Polyporivora*), apparently have no specific venational characters. The separation of this group requires clarification as the specific characters have not been sufficiently appreciated.

The first described species of this genus was *P. fasciata* Meigen (1804); it was described from a female specimen which had a dark mark on the fifth abdominal tergite and so clearly belonged to the species described by Verrall (1901) as *P. fasciata*. On material collected in Herefordshire by Dr. J. H. Wood, Verrall (*op. cit.*) also described a species very close to *fasciata*, which he named *hirticeps* on account of the very long facial and antennal hairs in the male; the females associated with these males differed from those of *P. fasciata* in having pluriserial dorsocentrals and in lacking any dark marking on the fifth tergite.

Then, Lundbeck (1927) identified as *P. fasciata* a species in which he was certain he had correctly associated the sexes. The male was apparently Verrall's *fasciata* but the female agreed more with Verrall's *hirticeps*. He believed that this indicated variation in these characters thought by Verrall to be of a specific nature and he proposed that *hirticeps* should be synonymised with *fasciata*. Lundbeck did, however, mention in his description of the male that there were long bristles on the second antennal joint and that the dorsocentrals were pluriserial as in the female. Verrall, of course, compared the antennal bristling of his *fasciata* only with *hirticeps* and he did not specify regarding the dorsocentrals in the male of either species.

In recent years, however, due largely to the previous recognition of their existence by Mr. J. E. Collin, I have become aware that some males which run to *fasciata* in Verrall's work differ from that species in having distinctly longer bristles on the second antennal joint, although not approaching *hirticeps* very closely in this respect. On closer inspection one finds that they also differ in the chaetotaxy of the thorax and in the genitalic structure. In these latter characters they are closer to *hirticeps* but are certainly not conspecific with it.

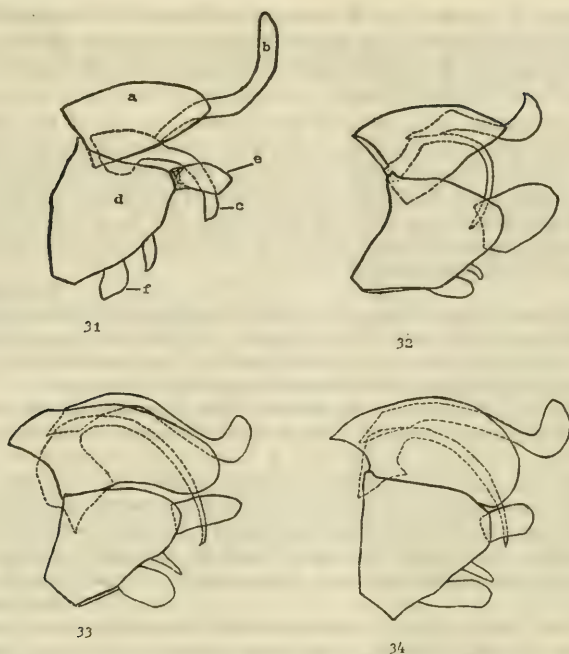
From Lundbeck's description it is obvious that he had this species rather than the true *fasciata* before him. As he associated with it females corresponding to Verrall's *hirticeps*, the probability is suggested that Verrall was wrong in identifying these females with *hirticeps*. Females of this description are widely distributed in this country and so are males of Lundbeck's *fasciata*, although rather less frequently collected than the females. As *hirticeps* males have been but



FIGS. 25–30. Lateral views of heads and antennae of *Platypeza* species. 25, 28. *P. hirticeps* Verr. 26, 29. *P. aterrima* Walk. 27, 30. *P. fasciata* Mg.

rarely obtained away from the type locality this tends to confirm the hypothesis. Nevertheless, as the specific characters by which females of Lundbeck's *fasciata* may be separated from those of *hirticeps* are not known it is possible that females of both species are presently being confused and no material taken *in copula* is yet forthcoming of either species. Verrall (*op. cit.*) did state that '*hirticeps*' females from Felden, Herts., differed from those collected with males at Cusop Dingle, Herefordshire, in their dorsocentrals being even more irregularly pluriserial and this may indicate a specific distinction but in the absence of definite evidence I am at present placing all females with pluriserial dorsocentrals together. Fresh material must be awaited before the female of *hirticeps* is correctly identified.

Having established beyond doubt that there is a fourth species of *Platypeza* in Britain, the necessity remains to find a name for it. As mentioned above it was described as *P. fasciata* by Lundbeck; according to Mr. Collin (*in litt.*) it may be *P. fasciata* of Meigen (1824) but it is clearly not *P. fasciata* of Meigen (1804), which was undoubtedly *P. fasciata* of Verrall. Mr. Collin was of the opinion (information *in litt.*) that it corresponded to *P. aterrima* of Walker (1836), which



FIGS. 31-34. Lateral views of male hypopygia of *Platypeza* species. 31. *P. consobrina* Zett. 32. *P. fasciata* Mg. 33. *P. hirticeps* Verr. 34. *P. aterrima* Walk. a=sternite; b=parameres; c=aedeagus; d=tergite; e=surstyle; f=cerci.

was unsatisfactorily described but was synonymised with *P. fasciata* by Verrall (1901) on the basis of two supposed type specimens in the Entomological Club collection. The specimens recorded by Dale as *aterrima*, which Verrall mentioned under *fasciata*, were of this species. On Collin's authority I intend to accept the name *aterrima* Walker but if it is shown that *aterrima* is not this species the name *lundbecki* might be proposed for it. This matter cannot yet be resolved as I have not been able to trace the whereabouts of Walker's types, although this may have been known to Collin.

The following revised key to the *Platypeza fasciata* group is offered to replace couplet 36 of my previous key for the males only. The females of *P. fasciata* and *P. aterrima* are distinguished by the characters used in my previous key for *fasciata* and *hirticeps* respectively and the *P. hirticeps* of the Kentish fauna dealt with in that paper was *P. aterrima*, except that the Cuckoo Wood specimen belonged not to that species but to *P. fasciata*. As mentioned above, the female of *hirticeps* cannot at present be distinguished from that of *aterrima*.

Males: The hypopygial structures of these species are illustrated (Figs. 31-34) together with that of *P. consobrina*. The latter has the parameres much longer than the aedeagus, which is very short and thick; it also has rather small slender surstyles. The other species have the long slender aedeagus in common but *P. fasciata* stands apart in the very large surstyles and rather shorter parameres

and aedeagus. *P. aterrima* and *P. hirticeps* are rather close to each other but nevertheless quite distinct in the relative lengths of the parts—*hirticeps* has the sternite and tergite distinctly more slender and the surstyles are longer and larger relative to the size of the tergite.

1. Bristles on second antennal joint not reaching the end of the third joint. Facial hairs short, not reaching end of third antennal joint (Fig. 27). Dorsocentral bristles uniserial. Only four strong notopleural bristles, no shorter bristles behind them. Abdominal tergite 6 mainly grey but with a black basally situated central marking. Surstyles of genitalia very large and broad. (In the chaetotactic characters it agrees with *P. consobrina* but differs distinctly in the venation and hypopygial structure.)

fasciata Meigen

- At least some bristles on second antennal joint exceeding the end of the third joint. Dorsocentrals more than uniserial. At least six strong notopleural bristles, with several shorter bristles behind them. Surstyles differently shaped; aedeagus and parameres also distinctly longer than in *fasciata*.
- 2. Only one long bristle on second antennal joint exceeding the tip of the third joint and this bristle distinctly shorter than the length of the entire antenna. Facial hairs not much longer than in *fasciata*, not reaching end of third antennal joint and as in *fasciata* stopping short below antenna (Fig. 26). Anterior dorsocentrals irregularly pluriserial to biserial (distinctly shorter and finer than in *fasciata*). Abdominal tergite 6 entirely grey dusted in contrast to preceding tergites. Surstyles of genitalia very short and small, about 2× long as broad; genitalia shorter in proportion to breadth than in *hirticeps*.

aterrima Walker

- Several very long bristles on second antennal joint, some of them as long as the entire antenna. Facial hairs very long, extending further up face to level of antennae and reaching the tip of the third joint (Fig. 25). Dorsocentral bristles as long as in *fasciata* and almost regularly biserial. Surstyles of genitalia larger and more slender than in *aterrima*, more than 2× as long as broad. Tergite and sternite of genitalia somewhat longer in proportion to their breadth than in *aterrima*.

hirticeps Verrall

The species of *Platypeza* all have a rather similar area of distribution in this country, none of them recorded from north of Lancs. and Yorks. in England, although there is one locality known for *P. fasciata* from the north of Scotland. No species of *Platypeza* had been recorded from Ireland until I found *P. consobrina* and *P. fasciata* there on 16.x.1973 (Kerry: Muckcross Abbey).

P. consobrina Zetterstedt

Widely distributed in Southern England, where it may be found commonly on the food-plant *Armillaria mellea*. The northernmost records are from N. Lancs. (Grange-over-Sands) and S.W. Yorks. (Ewden Valley) and it has been collected in Wales (Merioneth: Barmouth and Coed Camlyn).

P. fasciata Meigen

Not quite so common as *P. consobrina* although widely distributed in southern England as far north as Lancs. and Yorks. I have not seen any Welsh specimens but four females were collected in Scotland (Elgin: Logie, 27.ix.1909 (2), 29.ix.1910 (2)), by Mr. F. Jenkinson; these are in the Oxford and Cambridge Museums.

P. aterrima Walker

Usually occurring in the same localities as the two preceding species but less frequently although it predominates in the Dale collection. I have seen only twenty-five males, from eleven localities in six counties. Full data is given of this material:

Kent: Blean Woods N.N.R., 7-11.ix.1964 (1) (D. M. Ackland). Farningham, 26.ix.1909 (2); Darenth, 10.x.1913 (2); 14.x.1906 (2) (H. W. Andrews; in collns. of Brit. ent. nat. Hist. Soc., Oxford and Manchester Museums); Tunbridge Wells, ix.1921 (1) (C. G. Nurse; Cardiff Museum); Knole Park, 17.ix.1967 (1) on *Acer* leaf; Chislehurst; Walk Wood, 28.x.1973 (1) on *Acer* leaf (P. J. Chandler). **Surrey:** Ashted, 19.x.1964 (1) (L. Parmenter). **Sussex:** Hastings, 1891 (1) (C. W. Dale; Oxford Museum). **Dorset:** Glanville's Wootton, 25.ix.1876 (1), 7.ix.1877 (1), 5.x.1880 (3), 11.x.1880 (1), 25.ix.1890 (1), x.1898 (1), 15.ix.1901 (1) (C. W. Dale; Oxford Museum). **Heref:** Stoke Edith Wood, 5.ix.1905 (J. E. Collin; Oxford Museum). **Salop:** Oswestry, 8.x.1928 (C. H. W. Pugh; Manchester Museum). **Cambs:** Chippenham Fen, 5.x.1934 (1), 23.ix.1935 (1) (J. E. Collin; Oxford Museum).

Females corresponding to Verrall's *hirticeps* and Lundbeck's *fasciata* are more frequent than the males of either *hirticeps* or *aterrima*. This is curious as I have seen more males than females of *fasciata*. They have been collected as follows:

Kent (Bromley; Darenth; Blean; Ham Street; Pembury; Knole Park; Chislehurst, Pond Wood); **Herts** (Felden); **Hants** (New Forest); **Wores** (Abberley Hill); **Heref** (Cusop Dingle); **Cambs** (Chippenham Fen; Woodditton Wood); **Dorset** (Glanville's Wootton); **Staffs** (Alton) and **Chesh** (Cotterill Clough). While some localities are in common with *aterrima* males the Cusop Dingle specimens were collected with *hirticeps* males and more work is required to determine the female characters of these species.

P. hirticeps Verrall

I have seen only eleven males of this species, all but two of them collected in the type locality:

Heref: Cusop Dingle, 17.ix.1898 (1), 7.x.1899 (2), 7.ix.1900 (3), 7.ix.1901 (2), 20.viii.1902 (1) (Dr. J. H. Wood; B. M. (Nat. Hist.) (7), Oxford Museum (2)). **Lanes:** Grange-over-Sands, 13.viii.1946 (1) (A. E. Wright; in J. E. Collin colln., Oxford, Museum). Whalley emerged 1.x.1960 (1) reared with *P. fasciata* (both sexes) from an unnamed fungus (A. Brindle; Manchester Museum).

SUMMARY

The alterations to the British and Palaearctic list of Platypezidae proposed here may be summarised as follows:

1. The addition of *Microsania stigmatalis* Zetterstedt as a British species.
2. The restoration of *Callomyia elegans* Meigen to the British list (in accord with Verrall, 1912, overlooked in my previous paper).
3. *Callomyia leptiformis* (Fallén) (included in Kloet & Hincks' check list, 1945) to become a synonym of *C. elegans* Meigen.
4. *Callomyia humeralis* Loew to become a synonym of *C. speciosa* Meigen, not as Frey (1958) suggested of *C. dives* Zetterstedt.
5. The replacement of the name *Callomyia elegantula* Wood 1904 *nec* (Fallén 1815) in the British list by *Callomyia dives* Zetterstedt of which the former becomes a synonym.
6. *Callomyia fortunata* Frey (Tenerife) and *C. coei* Kessel (Nepal) are probably nothing more than local variations of *C. dives* Zetterstedt (Northern Europe) but this requires the examination of more material and from intervening areas before this can be definitely established.

7. The addition of *Agathomyia biseta* Oldenberg as a British species.
8. The separation of *Agathomyia cinerea* (Zetterstedt) and *A. elegantula* (Zetterstedt) as distinct species both occurring in Britain.
9. The addition of the genus *Seri* Kessel & Kessel to the British list on its species *S. obscuripennis* (Oldenberg), which is here transferred to this genus from *Platypeza* in which it was described (as *Clythia*).
10. The separation of *Platypeza aterrima* Walker 1836 from *P. fasciata* Meigen and *P. hirticeps* Verrall. The recognition that this species was that described as *P. fasciata* by Lundbeck (1927) and the suggestion on this basis that the female described as *P. hirticeps* by Verrall (1901) belongs (at least in part) to this species rather than to *hirticeps*.

To facilitate the incorporation of the changes suggested here and others dealt with in my previous paper into the British list of Diptera, the following check list of the thirty-one species of Platypezidae now known to occur in the British Isles is proposed. Synonyms not mentioned in this paper are omitted.

Sub-family Opetiinae

OPETIA Meigen 1830

nigra Meigen 1830

MICROSANIA Zetterstedt 1837

stigmatalis Zetterstedt 1837

pallipes (Meigen 1830)

pectinipennis (Meigen 1830)

ATELESTUS Walker 1837

pulicarius (Fallén 1816)

dissonans Collin 1961

Sub-family Platypezininae

CALLOMYIA Meigen 1804

elegans Meigen 1804

leptiformis (Fallén 1810)

speciosa Meigen 1824

elegans Meigen 1804 (partim♀)

dives Zetterstedt 1838 (partim♀)

humeralis Loew 1869

dives Zetterstedt 1838

elegantula Wood 1904 nec Fallén 1815

amoena Meigen 1824

AGATHOMYIA Verrall 1901

antennata (Zetterstedt 1819)

collini Verrall 1901

viduella (Zetterstedt 1838)

unicolor Oldenberg 1928

zetterstedti Wood 1910 nec (Wahlberg in Zetterstedt 1844)

falleni (Zetterstedt 1819)

biseta Oldenberg 1928

cinerea (Zetterstedt 1852) sensu Lundbeck 1927

elegantula Wood 1910 (partim♀) nec (Fallén, 1815)

elegantula (Fallén 1815)

boreella (Zetterstedt 1838)

Sub-family Platypezinae

PROTOCLYTHIA Kessel 1949

modesta (Zetterstedt 1844)

rufa (Meigen 1830)

- PLATYPEZA* Meigen 1803
consobrina Zetterstedt 1844
fasciata Meigen 1804
aterrima Walker 1836
fasciata Lundbeck 1927 nec Meigen 1804
hirticeps Verrall 1901 (partim♀)
hirticeps Verrall 1901
PLESIOCLYTHIA Kessel & Maggioncalda 1968
dorsalis (Meigen 1804)
PARAPLATYPEZA Kessel & Maggioncalda 1968
atra (Meigen 1804)
SERI Kessel & Kessel 1966
obscuripennis (Oldenberg 1916)
ORTHOVENA Kessel & Buegler 1972
furcata (Fallén 1823)
POLYPORIVORA Kessel & Maggioncalda 1968
infumata (Haliday 1838)
picta (Meigen 1830)

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I am also indebted to the late Mr. L. Parmenter for the loan of his collection of Platypezidae and for the encouragement given by him during the early stages of my work on the group. Finally acknowledgement should be given to the late Mr. J. E. Collin, who shortly before his death informed me of his views on the additional species of *Platypeza* separated here and was also aware of the need for some of the other changes in the British list as may be gleaned from study of his collection.

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PROCEEDINGS

THE 1973 ANNUAL EXHIBITION

An Exhibition in a year following a Centenary cannot be expected to be on the same scale, and this was reflected in the number of exhibits, which fell from 101 to 66. Nevertheless, there was wide agreement that the interest had been at least maintained. The percentage of exhibits designed around a theme continued to increase, while those of the type 'the best things I have caught in the past 100 years' were of course not in evidence. Moreover, the Society's appeal to members not to display long series of rare or endangered species had been successful; only one such species was exhibited, and that in small numbers.

To deal first with those exhibits not primarily featuring actual specimens, there were two fine photographic displays. Mr. W. Parker showed a number of transparencies of macrolepidoptera and other orders mainly caught or bred by himself and photographed (at a cost of only 4p per slide) on backgrounds against which they could clearly be seen. Mr. R. C. Revel's greatly enlarged portrait studies included some fine rare forms among the butterflies, the actual specimens being shown elsewhere in the room. Mr. Brian Hargreaves, whose work is becoming an annual feature of this event, showed us four masterly plates from the first volume of the new book on British Tortricoid Moths, together with the original drawing for the Society's Christmas card for 1973. Mr. John Heath of the Biological Records Centre at Monk's Wood showed in an ingenious and attractive manner the progress of the mapping schemes of various orders, for which he is so largely responsible.

Perhaps the most spectacular exhibit in this category, however, looking from a distance like a profile of some American city, was a map, in fact representing the Liverpool-Manchester area, on which Mr. J. Muggleton showed three-dimensionally the differing impact of industrial melanism on the two species *Biston betularia* L. and *Gonodontis bidentata* Clerk.

Among the breeding experiments was another display of new forms of *Tyria jacobaeae* L. by Mr. & Mrs. R. B. Watson, together with bred varieties of *Arctia caja* L. and *Lasiocampa quercus* L. This exhibit also contained a magnificent example of *Polygonia c-album* L. ab. *suffusa* Frohawk which had been donated to the Watson Collection by Mr. R. E. Stockley. *Lysandra coridon* Poda ab. *syngrapha* Kef. had been bred for six generations by Mr. R. Tubbs who included some melanic forms, and this species was also present in an exhibit by Mr. D. A. Trembath, which featured principally four generations of *Mimas tiliae* L., bred from a female ab. *brunnea*. Another most praiseworthy exhibit in this category was that of Mr. R. J. James, a junior member, who had captured a female *Hyles gallii* Rott. on July 14th 1973, and had bred 87 of the resulting offspring to the pupal stage, of which eleven had thus far emerged, three of which were shown with their parent. This species was indeed a great feature of the Exhibition, as a result of widespread migration in the summer. Specimens were shown by Mr. H. N. Michaelis, who had also been fortunate enough to come across that elusive customer, *Euphyia biangulata* Haw., in north Wales, Mr. L. W. Siggs, who also produced *Autographa gamma* L. var. *nigricans* and a specimen of *A. bractea* D. & S., a first record from the New Forest, Messrs A. D. A. Russwurm and H. G. M. Middleton, whose joint exhibit included interesting forms of *Erebia epiphron* Haw. from Perthshire, and Mr. P. J. Renshaw, in a small but high-class exhibit which also featured a melanic *Thyatira batis* L. from Ham Street, Kent. Finally, a specimen from Usk in the exhibit of Dr.

G. A. Neil Horton went almost unnoticed in a case which also contained the first British specimen of *Eriopygodes imbecilla* Fab., from Monmouthshire in 1972. All these *H. gallii* however, were somewhat overshadowed by a magnificent specimen of *Hyles euphorbiae* L. which was taken by Mr. E. H. Wild at a moth trap at Selsdon, Surrey. He also had a remarkable aberration of *Cyclophora linearia* Hübn. from Buckinghamshire, with broad dark fuscous central bands on the forewings.

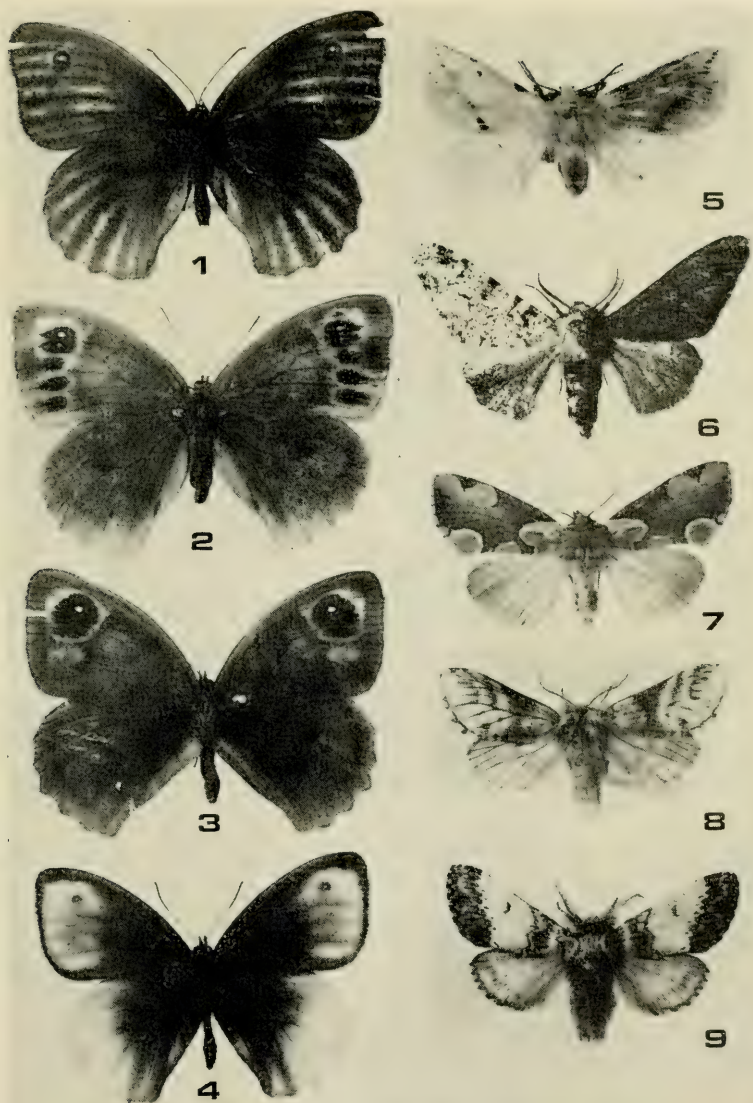
The President, Mr. J. M. Chalmers-Hunt, had been to Slea Head in Co. Kerry, and showed a range of variation in *Cامتogramma bilineata* L. from that locality. Other exhibits from afar within the British Isles included one from Skomer by Mr. P. M. Heath, and two from Shetland by Messrs Austin Richardson and D. W. H. Fennell, who also featured *Phragmatobia fuliginosa* L. ab. *lutescens* Moseley from Hampshire.

Another species very strongly represented in the exhibition was *Maniola jurtina* L. Some remarkable forms were on display, notably by Mr. R. C. Revels, who also had fine aberrations of *Ladoga camilla* L., *Apatura iris* L. and *Aphantopus hyperantus* L.; Mr. H. G. Phelps, who included ab. *ichnusoides* of *Aglais urticae* L.; Mr. R. C. Dyson, Major-General C. G. Lipscomb, Mr. I. G. Farwell and the Rev. A. H. H. Harbottle, who showed also a remarkable halved somatic-mosaic male *Biston betularia* L.

Among the butterflies, Mr. D. H. Walker had a fine male aberration of *Argynnis aglaja* L. from Wales, while Mr. S. M. Hanson had had the singular good fortune to take abs. *nigrina* and *semi-nigrina* of *Ladoga camilla* L. in Sussex on the same day. Mr. David Tyler and Mr. W. G. Tremewan showed forms of *Lysandra coridon* Poda, Mr. P. N. Crow a good underside variety of *Aricia agestis* D. & S., Mr. Paul W. Ferguson a remarkable bred ab. *fulva* Oudemans of *Inachis io* L. and Mr. N. A. Watkins had a display of caught and bred *Melanargia galathea* L. which included a splendid melanic taken in Gloucestershire by Mr. A. N. Grose. This species was also represented in an exhibit by Mr. R. M. Craske which included *Coenonympha pamphilus* L. ab. *postcuneata* Leeds from Sussex. The Baron de Worms, in a comprehensive exhibit reflecting the energy with which he collects, included a series of *Mellicta athalia* Rott. from Devon of which the showpiece was a male with cream ground colour, while Mr. L. D. Young concentrated entirely on aberrations of *Lycaena phlaeas* L.

Bedstraw and Spurge Hawks already mentioned were the migrants to catch the eye, but there were several other rarities on show. Mr. T. W. Harman had a specimen of *Uresiphita limbalis* D. & S. from Swanage, Mr. N. A. Richards one *Rhodometra sacraria* L., Mr. Kim Noble *Mythinna unipuncta* Haw. (one of nine specimens taken by him this autumn) and *M. vitellina* Hübn. from Somerset, Mr. W. E. Collinson *Diachrysa orichalcea* Fab. from Hampshire. But the British Museum (Natural History) appropriately scooped the pool with three recent donations: *Ochroleptura fennica* Tausch., the second British specimen, taken by Mr. L. A. Durden in August 1972, *Sceliodes laisalis* Walker, the first British record, taken by Mr. E. W. Classey in September 1973, and *Danaus plexippus* L. from Cornwall, taken by Mr. Tim Williams in September 1975.

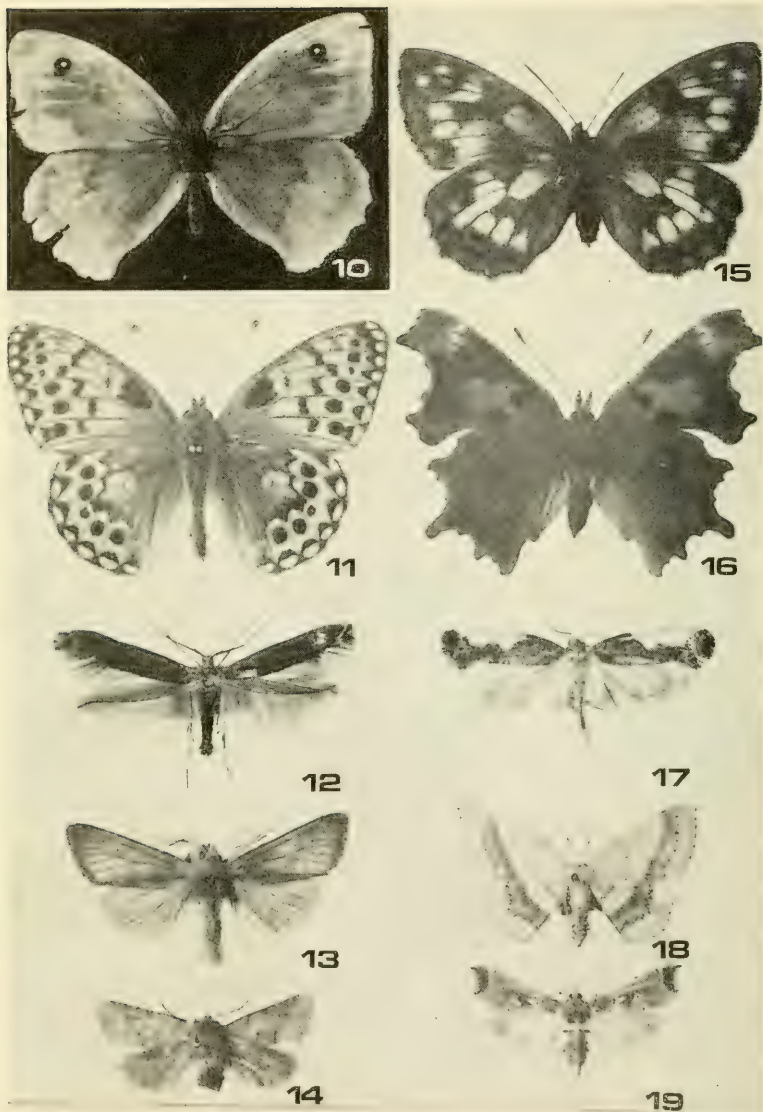
Several members had spectacular aberrations of relatively common species. Perhaps the most noticeable was Mr. R. E. M. Picher's *Lasiocampa quercus* L. bred from a larva of unusual colouring found wild in Lincolnshire; but also of quality were Sir Eric Ansorge's asymmetrical aberration of *Spilosoma luteum* Hufn. from Buckinghamshire, a pale *Drymonia dodonaea* D. & S. taken by Mr. L. J. Evans in Devon and an asymmetrical, perhaps gynandrous specimen of *Lomaspilis marginata* L., bred from the New Forest.



THE 1973 EXHIBITION

1. *Maniola jurtina* L. ab. *radiata* Frohawk, Rev. A. H. H. Harbottle; 2. *M. jurtina* ab., Mr. R. C. Revels; 3. *M. jurtina* ab. *anticrassipuncta* Leeds, Mr. R. J. James; 4. *M. jurtina* ab., Mr. I. G. Farwell; 5. *Spilosoma luteum* Hufn. ab., Sir Eric Ansorge; 6. *Biston betularia* L. ab., Rev. A. H. H. Harbottle; 7. *Thyatira batis* L. melanic, Mr. P. J. Renshaw; 8. *Drymonia dodonaea* D. & S. ab., Mr. L. J. Evans; 9. *Drymonia ruficornis* Hufn. ab., Mr. W. E. Collinson.

Photographs by D. E. Wilson



10. *Maniola jurtina* ab., Mr. R. C. Dyson; 11. *Argynnis aglaja* L. ab., Mr. D. H. Walker; 12. *Coleophora fuscicornis* Zell ($\times 2$), Col. A. M. Emmet; 13. *Agrochola helvola* L. ab. *unicolor* Tutt, Mr. R. F. Bretherton; 14. *Eriopygodes imbecilla* Fab., Dr. G. A. N. Horton; 15. *Melanargia galathea* L. melanica, Mr. N. A. Watkins; 16. *Polygonia c-album* L. ab. *suffusa* Frohawk, Mr. R. B. Watson; 17. *Monopis monachella* Hübn. ($\times 2$), Mr. H. E. Chipperfield; 18. *Cyclophora linearia* Hübn. ab., Mr. E. H. Wild; 19. *Sceliodes laisalis* Walker, B. M. (N. H.), taken by Mr. E. W. Classey.

Photographs by D. E. Wilson

There were a number of exhibits of regional interest: Dr. H. B. D. Kettlewell showed the incidence of *Paradiarsia glareosa edda* Staud. in Caithness, Dr. John Langmaid had a specimen of apparently typical *Cryphia muralis impar* Warren from Southsea, Hampshire, and a series of *Eupithecia phoeniciata* Ramb. from the same locality. A number of this species were also shown by Mr. S. A. Knill-Jones from Freshwater, Isle of Wight. Mr. D. E. Wilson showed a range of variation in *Rhizedra lutos* Hübn. from Hertfordshire, and an interesting exhibit by Mr. R. F. Bretherton compared the 1973 season in his moth trap at Bramley, Surrey with those gone before, by specimens and histograms.

In addition to the migrant Pyrales already mentioned, there were several other interesting members of that family on view. Dr. Neil Horton showed *Catoptria margaritella* D. & S. from Usk, Monmouthshire, this was a new county record. His exhibit also included *Dioryctria abietella* D. & S. from Somerset: an example from Suffolk was shown by Mr. H. E. Chipperfield, together with *Perinephele perlucidalis* Hübn. from the same county. Mr. R. F. Bretherton had *Crambus uliginosellus* Zell. which had come to his light trap at Bramley, Surrey. Pyrales from further afield included Mr. J. Roche's *Eudonia alpina* Curt. from Perthshire and the President's *Pyrausta sanguinalis* L. from the Burren. The rarest species in this group was *Heterographis oblitella* Zell. which Mr. D. W. H. Fennell took at M.V. light at St. Helens in the Isle of Wight. This species has been considered a migrant but the fact that most of its records are from the Isle of Wight suggests that it may be established in that vice-county.

The main exhibit devoted to the Tortricidae was that of Messrs R. and A. J. Fairclough. For some years they have been studying *Acleris cristana* D. & S. Of the 118 forms described by Lt.-Col. W. B. L. Manley recently (*Ent. Gaz.*, 24:89), they put on a show of 91, the most notable being *fulvana* Sheldon, *clarkiana* Webb, *postchantana* Webb, *transversana* Clark, and *ruficolana*, *faircloughiana*, *subfussnidgeana*, *nigralana*, *pronigralana* and *subnigralana*, all these being new forms named by Manley in his paper. Mr. Chipperfield's Suffolk exhibit contained specimens of *Adoxophyes orana* F.R. and *Lozotaeniodes formosana* Fröl.; these comparative new-comers to Britain are extending their range and the fact that Mr. Chipperfield has been taking them at his home for the past two or three years proves that they are now well established in Suffolk. Another newly recognised British Tortricid is *Acleris unitana* Hübn. which the President showed us from the Burren. In addition to an example of the very pale form of *Cnephasia stephensiana* Doubl. (*chrysanthæana* sensu auct.) which occurs in east Kent, Mr. Fennell had *Epiblema cnicicolana* Zell. from near Winchester, a rare species which has hitherto eluded most of his contemporaries.

The most interesting Momphidae were two scarce and local species bred by Mr. J. Roche from the Dartford district of Kent. These were the beautiful *Cosmopterix zieglereella* Hübn. (*eximia* Haw.) and the seldom seen *Blastodacna atra* Haw. reared from the shoots of apple. Good Gelechiids included his *Pexicopia malvella* Hübn. from the same district and Mr. J. M. Chalmers-Hunt's *Scrobipalpa clintoni* Povolny from Argyllshire.

The most noteworthy of the Coleophoridae was *Coleophora fuscicornis* Zell., a species new to Britain, shown by Lt.-Col. A. M. Emmet, who found it well established in the Essex Naturalists' Trust reserve at Fingringhoe Wick. The President had bred specimens of *C. ramosella* Zell. from the Burren, its only known locality in the British Isles. Mr. H. N. Michaelis showed living larvae in their characteristic long cases of *C. inulae* Wocke from north Wales; it is probable that his is the first record for this very local species from the Principality. His specimen of *Ypsolopha horridella* Treits. is likewise new to north Wales.

Mr. E. S. Bradford showed an interesting and varied collection of moths taken or bred in the wood he has recently purchased near Herne Bay in east Kent. One of the nicest of these was *Triaxomera fulvimetrella* Sodof., which he had reared from larvae feeding in rotten sticks. But the prize for the best Tineid undoubtedly went to Mr. Chipperfield for the fine specimen of *Monopis monachella* Hübn. which he had taken on the wall of a shed in his garden at Walberswick; there are old records from Whittlesea Mere and Yaxley Fen, also in East Anglia, but it does not seem to have been taken in Britain for many a day prior to this specimen.

Not many Incurvariidae were on display, but among them was a specimen of *Adela croesella* Scop. taken by Mr. Roche in Perthshire and possibly new to Scotland.

Several Nepticulidae were included among the species Mr. Bradford showed from his wood, and the bulk of Col. Emmet's exhibit was devoted to this family. He had on display set specimens and/or leaf-mines of 89 out of the 94 species confirmed as British. Amongst the mines was that of *Ectoedemia erythrogenella* Joan., a species new to Britain which he had detected only a fortnight previously at Portland Bill. He also showed distribution maps for the family prepared with the help of many of those present for the projected new work on the British Lepidoptera.

Exhibits of other orders were not numerous but of a high standard. The Zoological Society showed a particularly fine assortment of living arthropods and amphibians and Mrs. F. Murphy some living arachnids from Arizona. Of special interest were an immature female Black Widow spider and *Mastigoproctus giganteus* a Whip Scorpion or Vinegarone.

Mr. P. J. Chandler showed five species of Diptera new to Britain which included *Pararhamphomyia marginata* F. (Empididae) a remarkable little fly taken at M.V. light at Ham Street, Kent, in June, 1973, by Messrs L. K. Evans and E. H. Wild; *Cerodontha ornata* (Meig.) (Agromyzidae), a leaf-miner of the Flowering Rush (*Butomus umbellatus* L.) only known so far from Runnymede, Surrey; *Norellia spinipes* Meig. (Scatophagidae) which develops in the leaf sheaths of Daffodil (*Narcissus* sp.); *Cosmetopus dentimanus* Zett. (Scatophagidae) River Test, Hants., and *Molophilus lackschewitzianus* Alex. (Tipulidae) first found in Ireland in 1970 but since found in several places in England and Wales usually in shady woodlands.

Other Diptera of special interest were shown by Mr. P. N. Crow including the second record of the Syrphid *Eriozone syrphoides* Fall., a fine female taken in August, 1973 near Bettws-y-coed, N. Wales and the Robber flies *Dioctria oelandica* (L.), and *Pamponerus germanicus* (L.).

A very attractive exhibit was presented by Mr. G. R. Else which included such rare species as *Aporus femoralis* Van der Lind. (Hym. Pompilidae) and *Ectemnius nigrinus* (Herr.-Schaeff.) (Hym., Sphecidae) both from Oxenbourne Down, Hants. Diptera of note were *Callicera aenea* (F.) and *Doros conopseus* (F.) both Syrphidae. The Chloropid *Lipara lucens* Meig., was shown with its galls, parasitoides, predators, and other associates, all taken in S.E. Hants., during 1973. Mr. Else also showed specimens and photographs of the Wart-biter (*Decticus verrucivorus* (L.)) (Saltatoria, Tettigoniidae) and the Field Cricket *Gryllus campestris* L., (Saltatoria, Gryllidae) with notes on their conservation. Paintings of Diptera of a high quality were shown by Mr. C. O. Hammond.

We were pleased to have the Amateur Entomologists' Society in attendance displaying their wide range of publications.

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are held regularly at the Society's Rooms, but the well-known ANNUAL EXHIBITION takes place in the autumn in external accommodation. Frequent Field Meetings are held at weekends in the Summer. Visitors are welcome at all meetings. The current Programme Card can be had on application to the Secretary.

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NATURAL PATTERN VARIATION AND THE
EFFECT OF COLD TREATMENT IN THE
GENUS *ARICIA* R. L. (LEPIDOPTERA,
LYCAENIDAE). (*ARICIA* STUDY NO. 14)

by OVE HØEGH-GULDBERG, Naturhistorisk Museum, 8000 Aarhus C.,
Denmark.

Aricia agestis Schiff. and its sibling species *A. artaxerxes* F. (= *allous* G.-Hb.) were not separated until 1934. However, they are so closely related that in captivity they can interbreed, sometimes producing fertile hybrids. Most characters, both biological and morphological, overlap, but invariably *agestis* has two or three broods a year, but *artaxerxes* only one. Both are widespread in Europe and, *artaxerxes* especially, have evolved a number of characteristic subspecies which have remained constant because these species do not fly far.

Referring to *artaxerxes*, Howarth (1972) only mentions ssp. *allous* amongst the northern continental fauna. However, according to the last ten years' investigations only the alpine specimens are left with the name *allous*, whilst in eastern Europe there is ssp. *inhonora*, in the Harz mountains ssp. *hercynica* (Høegh-Guldberg and Jarvis, 1969), in Norway ssp. *lyngensis* and ssp. *opheimi* in Sweden ssp. *horkei* and ssp. *rambringi*, and in Denmark the last and the very interesting ssp. *vandalica*.

It had not been possible to work experimentally with these animals until the late fifties when Jarvis demonstrated that diapause could be suspended by illuminating the larvae for 24 hours a day and a new generation produced every second month. Since then our rearing and crossing experiments have characterized the species and sub-species and proved that these are genetically determined and not due to climatic conditions (Frydenberg and Høegh-Guldberg, 1966; Høegh-Guldberg, 1961, 1963, 1966a, 1968, 1971a, 1973; Høegh-Guldberg and Jarvis, 1969; Jarvis, 1958, 1958-9, 1963, 1966, 1968, 1969). Often there is a polygenic effect and the result of a crossing may be intermediate or heterotic, but there are also characters which are due to a single gene. For example, in an experiment conducted to the F₂ generation there were five characters, each due to a single gene, which segregated independently according to the Mendelian formula (Høegh-Guldberg, 1966; Frydenberg and Høegh-Guldberg, 1966).

VARIATION

Many forms of the two species have been described, often before the separation of the species. As a result the description may have been a form of either *agestis* or *artaxerxes*. This does no harm because most forms are found in both species and all subspecies. The patterning of both species is basically similar and there are many possibilities of variation. The ocelli of the underside may vary in size, shape and number. This latter variation can be expressed as the 'spot no.', which indicates the number of spots on one forewing and hindwing (a pupillated spot is scored as '2', a blind spot is '1'). It may vary from two to 42.

Lempke (1956) records 24 different forms from Holland, all of which must be of *agestis*, as *artaxerxes* does not occur in the Low Countries. Kaaber & Høegh-Guldberg (in Høegh-Guldberg, 1958) have named ten more forms of *artaxerxes* *vandalica*. I have also found ten more forms which appear only in cold experiments.

The Danish *artaxerxes vandalica*, which is only found in the area around Hirtsholms on the west coast of Jutland, is very prone to variations. We tried hard to catch particular forms, especially f. *panobsoleta* (= *caeca*), for heredity experiments. The f. *panobsoleta* has always eluded us and it may have become rarer in the last few years.

COLD FORMS

As stated, 34 forms have been described from nature in the two species. By chilling pupae reared from various populations, 21 of these forms have occurred as phenocopies as well as an additional ten forms not found in nature and which have not been named. The 13 forms from nature which do not occur in cold experiments are probably due to heredity alone (such as f. *retrojuncta* (Høegh-Guldberg, 1966; Frydenberg & Høegh-Guldberg, 1966), although they may be partly influenced by temperature. It therefore seems that cold should play a part in producing these forms in nature as well as in the laboratory.

When different populations are subjected to cold experiments they usually react similarly, but there are always both quantitative and qualitative differences. Furthermore, within the same brood, the same treatment may produce changes varying from slight to major in siblings. It can therefore be concluded that there are genetic differences, both between different populations and between siblings. On the other hand, a f. *panobsoleta* has been found in experiments which have been carried out entirely at room temperature. Normally, however, it appears that both an hereditary factor and cold are required.

Jarvis (1958-9) demonstrated that young *agestis* pupae cooled constantly, at 1-2°C for three weeks, produced adults which showed changes when compared with controls. The question arose of what age the pupae should be when exposed to cold. Until recently we have avoided pupae younger than one or two hours because of the risk of injury due to handling.

Before an *Aricia* larva pupates it spends between one and three days quietly resting as a prepupa. The shedding of the larval skin takes place at any time of day or night and is independent of illumination. Two or three hours before the shedding takes place the dorsal line becomes broader, pellucid and pulsates. The sides change from green to yellow and dark 'windows' appear. Half to one hour before shedding, white wrinkles appear in the skin. Various movements then take place for 10-15 minutes before the larval skin bursts over the thorax and becomes gathered under the last segment. The pupa is thus formed. With experience it is possible to judge at what time pupation will occur. The newly formed pupa is at first so thin skinned that the slightest damage will lead to a leakage of its contents and death.

Jarvis (1958-59) showed that four conditions were necessary for cooling to produce variations: (1) the pupa should be young, (2) the temperature low, (3) and constant, and (4) it should last for at least three weeks. However, in nature, no such conditions occur at the time of pupation during the summer months and therefore it has not been possible, until now, to suggest natural variant forms as cold forms.

Between 1966 and 1968 (Høegh-Guldberg, 1968), I was able to confirm Jarvis's findings and was able to add a fifth condition: the genotype of the individual is decisive. Major variation occurred when the pupa was first exposed to cold when less than 24 hours old; but changes occurred even with 48 hour-old pupae. Some of the variations are figured (Figs. 4A-5D), most of them corresponding to natural forms.

In 1969 (Høegh-Guldberg & Jarvis), further cold experiments were carried out using different temperatures and also chilling in the prepupal stage. Chilling of the prepupae was usually commenced when they were 24 hours from pupation and was continued for four to eight days. Some of the prepupae died, but most pupated and all gave rise to normal forms. It was thus apparent that cold forms were not produced in these conditions. Another series of experiments, however,

produced variation when pupae were subject only to one or two weeks' constant cooling, including, quite unexpectedly, a specimen of *f. panobsoleta* (Figs. 6A-6D).

In 1972, experiments were conducted, using nearly 500 pupae of 3 *artaxerxes* subspecies and two crossings, in which large series of one to 24 hour old pupae were subjected to 2°C for between one and seven weeks. As usual changes occurred in all groups. However, among the 47 pupae which were cooled for seven to ten days only minor changes occurred, and these only in a few specimens (a paper is in print in *Natura Jutlandica*).

The conclusion from these experiments had to be that our experiments could not reflect conditions occurring in nature as the minimum of two weeks' constant and very low temperature needed to produce variation does not occur in the summer months in our countries.

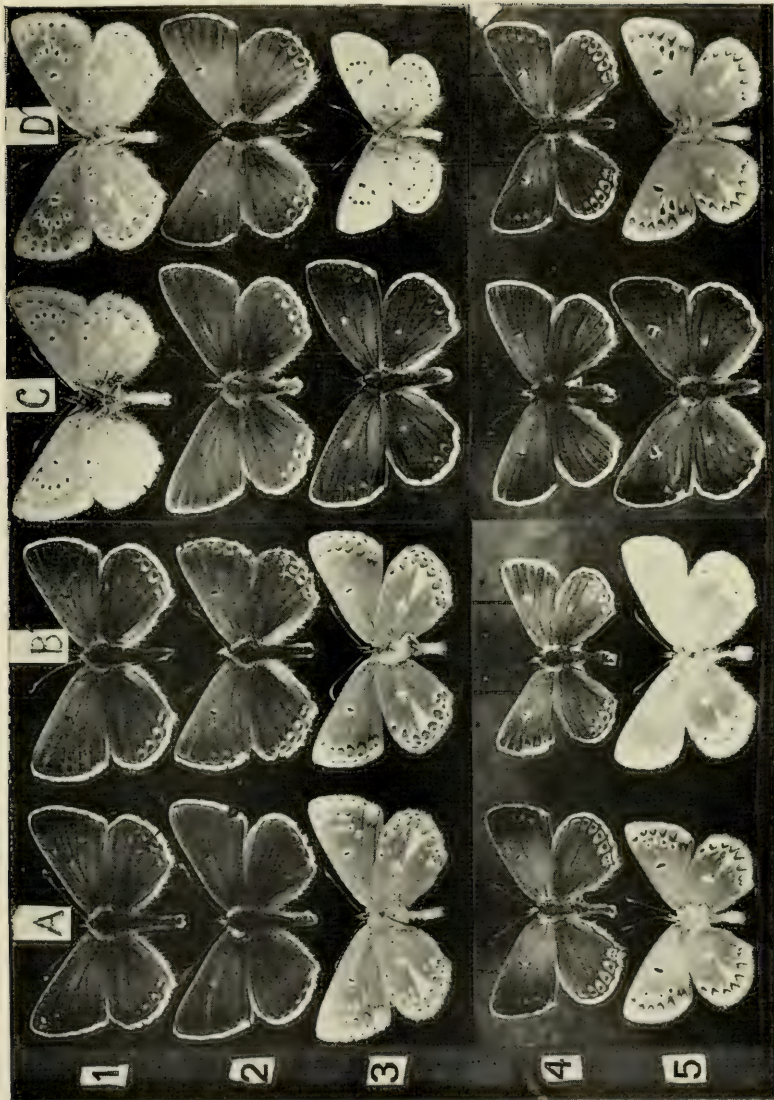
It was thought possible, however, that variation might be produced in an especially cold-sensitive individual by chilling at a particularly critical period. Then in October 1972 whilst watching a *vandalica* larva pupating, I got the idea that at this moment, when enormous cell activity is taking place, the pupa might be especially sensitive. So I carefully placed the fresh pupa in a refrigerator at 2°C for one week. When it emerged 20 days later it showed distinct variation. It had a spot number of 19 and was ff. *vedrae nigrescens unicolor* (Fig. 7D). These forms are not unusual in *vandalica*, but this specimen was also *f. eos*, which had never occurred before, nor since, in *vandalica*, either in nature or under experimental conditions. So here was something worth studying!

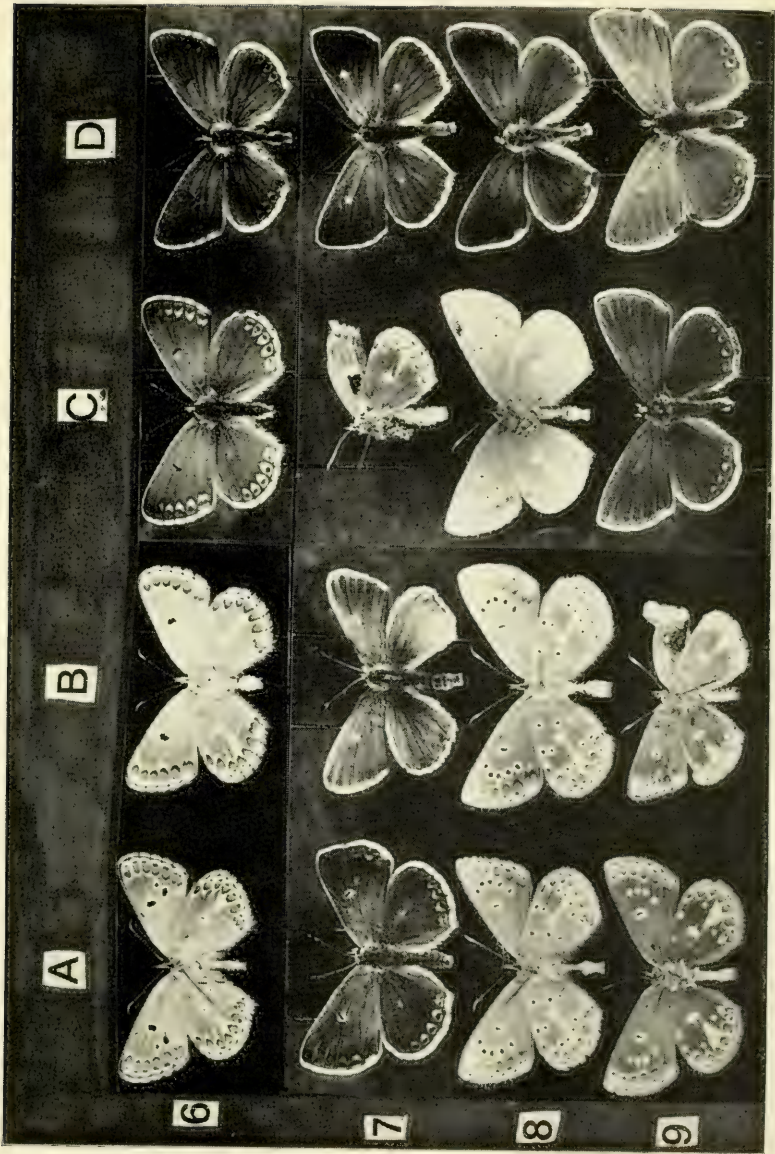
No more *vandalica* larvae were available for experiments, but I had many from a crossing between the two Swedish subspecies of *artaxerxes*, *horkei* and *rambringi* (Høegh-Guldberg, 1973). In that crossing the rare gene combination for *f. eos* happened to occur in the bred generation. 32 fresh pupae were cooled for periods between 12 hours and four weeks, mostly nearer the former. 46 pupae were kept at room temperature as controls. Amongst the imagines resulting from the control pupae the lunules varied somewhat but the spot number was constantly high, only a single specimen was as low as 32. Nearly a quarter of these controls were *f. snelleni* or *f. eos* and consequently we cannot ascribe to cold the numerous specimens of these forms occurring in the cold treated pupae. However, the spot number showed differences. One fresh pupa cooled for 12 hours produced a female with a spot number of 27, which was also *f. panalbisignata* (Fig. 7A); a form which did not occur in any of the control group. It was also *f. eos* which often occurred in the controls, but this example had an extremely prominent white ring on the forewing, much more pronounced than in any of the controls. Another specimen (Fig. 7B) was also very interesting. It was ff. *snelleni albicostalis albisignator*. The underside showed *f. vedrae* with a spot number of 8; the pupa had been cooled for only three days. Two males cooled for four days had spot numbers of 8 and 20 and six days cooling produced a female *f. panobsoleta*, with a spot number of 3 (Fig. 7C), and a male with a spot number 15. Of the 28 fresh pupae cooled for less than one week, 12 exhibited marked changes. Thus it appeared that cold treatment of fresh pupae produces much more variation than if the pupa is cooled one hour or more after pupation as had been done in previous experiments. However, it still was apparent that the pupae needed a special genotype as more than half of them so treated produced normal imagines.

These experiments had to be followed up and in the summer of 1973 more than 200 *vandalica* pupae were used in cold experiments. The results of these are shown in the table. The experiments were carried out to simulate naturally occurring conditions as closely as possible. Cold treatment was given to fairly large groups

PLATE III—*ARICIAE* FROM NATURE, AND COLD FORMS

source	species	subspecies	sex	form	locality	date
from nature	1AC	<i>artaxerxes</i>	♂	holotype	Tornby Str.	11.vii.60
	1BD	"	♀	allotype	"	"
	2A	"	♂	<i>albispignata, unicolor</i>	"	"
	2B	"	♀	<i>panalispignata</i> , type	"	"
	2C	"	♀	<i>albicostalis (albivenata)</i> , type	"	"
	2D	"	♀	<i>snelleni</i> , type	Tversted Str.	17.vii.61
	3A	"	♀	<i>vedrae</i> (spot no. 16)	Tornby Str.	11.vii.60
	3B	"	♀	<i>panobsoleta (= caeca)</i> , type	Tversted Str.	16.vii.61
reared at room temperature	3C	"	♀	<i>eos</i>		21.xi.72
	3D	<i>F₁art. artaxerxes × horkei</i>	♀	<i>retrojuncta</i>		17.xii.64
<hr/>						
Cold forms						
from pupae 1-24 hours old	4A	<i>P₁agestis</i>	♀	<i>albispignata</i> , reduced orange lunules	age of pupa	cooled for
	4B	<i>F₁art. vandatica × agestis</i>	♂	<i>panalispignata, albicostalis, snelleni</i> , greyish powdered	+ 1-24 h	4 weeks
	4C	<i>F₁artaxerxes</i>	♀	<i>albicostalis, postalbivenata</i>	"	5 weeks
	4D	<i>P₁agestis</i>	♀	<i>snelleni, albispignata</i>	"	4 weeks
	5A	<i>P₁artaxerxes</i>	♀	<i>vedrae</i> (spot no. 16)	"	"
	5B	<i>P₁artaxerxes</i>	♀	<i>panobsoleta (= caeca)</i>	"	"
	5C	<i>F₁artaxerxes</i>	♀	<i>eos, panalispignata</i>	"	"
	5D	<i>P₁artaxerxes</i>	♀	<i>vedrae</i> (Spot no. 13), <i>elongata</i> 'exclamations'	"	"





Photographs by Merete Thaarup Jepsen

PLATE IV — COLD FORMS OF *ARICIAE*

Cold forms		species	subspecies	sex	form	age of pupa	cooled for
from pupae 1-24 hours old	6A	<i>F₁agesis</i>		♂	<i>vedrae</i> (spot no. 14)	+ 1-24 h	2 weeks
	6B	"		♀	<i>panobsoleta</i> (= <i>caeca</i>)	"	"
	6C	"		♀	<i>albignata</i>	"	"
	6D	"		♂	<i>semialbous</i>	"	"
from pupae 1-5 min. old	7A	<i>artaxerxes</i>	<i>F₁rambringi</i> × <i>horkel</i>	♀	<i>panalbignata, eos</i>	+ 1 min	12 hours
	7B	"	"	♂	<i>albicostalis, albignata, snelleni,</i> <i>whitish powdered</i>	+ 5 min	3 days
	7C	"	"	♀	<i>panobsoleta</i> (= <i>caeca</i>)	+ 1 min	6 "
	7D	<i>F₁artaxerxes</i>	<i>vandalica</i>	♂	<i>eos</i>	+ 5 min	7 "
Controls at room temperature	8A	<i>P₁</i>	"	♂	complete spot no. (33)	room temperature	
	8B	"	"	♀	" " (34)	"	"
	8C	"	"	♂	the most reduced control (spot no. 18)	"	"
	8D	"	"	♂	<i>albignata</i> (the only ab. form)	"	"
from pupae 1 min old pre-pupae 15 min)	9A	"	"	♀	<i>vedrae</i> (spot no. 12)	+ 1 min	9 hours
	9B	"	"	♀	<i>panobsoleta</i> (= <i>caeca</i>) (<i>albicostalis</i>)	- 15 min	2 nights
	9C	"	"	♀	<i>albicostalis</i>	+ 1 min	9 hours
	9D	"	"	♀	<i>snelleni, panalbignata</i>	+ 1 min	2 nights

of mature larvae, early and late prepupae and fresh pupae for one, two or three 'nights'. All were kept at room temperature between coolings and afterwards. 101 individuals were subjected to cold and 33 were kept at room temperature.

In the resulting imagines differences were found in the spot numbers and in the presence of white elements. The average spot number of the controls was 29; all but three were above 27. Two normal undersides (Figs. 8A & B) and the two most aberrant of the controls, *albispinata* (Fig. 8D) and one with a spot number of 18 (Fig. 8C) are shown. The results of the cooling experiments are shown in full in the table. Of particular note is a specimen with a spot number of three (a true *panobsoleta*) (Fig. 9B). It had been first cooled 15 minutes before pupation should have occurred and when removed from the refrigerator it had not yet pupated; but it did so one hour later and then had a further 'night' of cooling. Of the fresh pupae subjected to cold, the specimen with a spot number of 12 is figured (Fig. 9A); it emerged from a pupa which was cooled for only nine hours from when it was one minute old.

Of the 33 controls only one showed white elements, a f. *albispinata*. Among the cooled groups white elements only occurred if cooling took place just around the time of pupation. The specimen which was f. *panobsoleta* and has already been mentioned (Fig. 9B) is f. *albicostalis*. A one minute old pupa cooled for two 'nights' gave a joint ff. *snelleni panalbispinata* (Fig. 9D). A one minute old pupa cooled for only nine hours produced a f. *albicostalis* (Fig. 9C).

In conclusion, we find that in the controls there are approximately 12% which show minor and common variations, whilst about 32% of prepupae cooled one hour or less before pupation and about 39% of cooled fresh pupae showed variation. In these latter two groups eight rare forms were found. Again, however, only a minority of individuals, which are sensitive to cold, show variation. These experiments show that the sensitive period, when cold will produce variation, extends from two hours before to ten minutes after pupation.

With these findings the possibility of explaining the natural forms as partly produced by cold has advanced considerably, for such conditions, as simulated in the experiments, easily occur at many sites where *Aricia* spp. are found. At Hirtshals in Jutland and on the north-east coast of Britain, where the greatest variation occurs, bitterly cold nights occur during the early summer months, particularly in hollows between the dunes where the food plant grows, when pupation takes place. As pupation may happen at any hour, it may coincide with the formation of a 'cold pool' in a hollow. This occurrence would correspond to the experiments with pupae cooled for nine or 12 hours. It may be objected that the cold will stop the prepupa from pupating and this is often so, but not always. These experiments showed that a third of prepupae cooled up to two hours before pupation was expected and continued their transformation during cooling. But whether pupation takes place or not they receive a cold shock at a critical time. As long ago as the fifties, Jarvis suggested that f. *panobsoleta* might be due to accidental cooling on cold nights during the critical phase of pupation and it appears that he was right.

After these experiments we must alter slightly our former conclusions and put forward the following four conditions as necessary to produce experimentally phenocopies of control forms:

- (1) The individual must be cold sensitive.
- (2) Cooling must take place just before or at the time of pupation.
- (3) The temperature must be between 2 and 5°C.
- (4) The cooling must last for at least nine hours and, preferably, be repeated once or twice.

What has been described here concerning *Aricia artaxerxes vandolica*, must also apply to *A. agestis*. In *Polyommatus icarus* L. a similar action of cold has been found (Høegh-Guldberg, 1971b) and it is reasonable to assume that aberrant forms in other families may be caused in the same way.

Table - to show the effects of cooling *Aricia artaxerxes* ssp. *vandolica* during critical phases of pupation.

		no.	died	crip- pled	av. spot no.	all low spot nos.
Room temp.	1	17			29.5	
controls	2	16			29.9	24,22,18 (a)
<hr/>						
Cooling at 2-5°C						
Mature larvae						
2 'nights'		5		1	32.0	
3 'nights'		8			30.4	
Prepupae						
-2 days, 2 'nights'		4			26.5	18
-1 day, 2 'nights'		4			30.2	
-3 to 1½ hrs, 1 'night'		3			33.3	
" 2 'nights'		2		1	33.0	
" 3 'nights'		4		1	19.8	18,5
-1 to ½ hr, 1 'night'		7		2	29.0	
" 2 'nights'		11	1	1	25.8	25,25,24,18
" 3 'nights'		15		1	27.8	25,20,20
-15 to 2 mins, 1 'night'		3			27.0	23
" 2 'nights'		3		1	15.7	23,21,3, (b)
" 3 'nights'		1	1			
Pupae						
0 to 10 mins, 1 'night'		16			25.3	24,23,21,12,10 (b)
" 2 'nights'		7	1		27.0	23,21,13 (c)
" 3 'nights'		8			29.1	24

(a) one specimen of f. *albisignata* emerged

(b) one specimen of f. *albicostalis* emerged

(c) one specimen of ff. *snelleni panalbisignata* emerged

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**DICRANOPTYCHA OSTEN-SACKEN
(DIPTERA, TIPULIDAE), A
CRANEFLY GENUS NEW TO BRITAIN.**

BY ALAN E. STUBBS AND CHRISTOPHER J. LITTLE

One of us (C.J.L.) collected a series of craneflies from Darenth Wood, Kent, on 5th June 1973. On examining this material (A.E.S.), a single male *Dicranoptycha* was found to be present, the first record of this genus in Britain.

Fortunately there has been a recent revision of the genus in Europe by Stary (1972). He describes two species new to science, raising the number of European representatives to five. In this work the British specimen runs to *fuscescens* (Schummel, 1829) which Stary refers to as 'a common species, very likely distributed throughout Europe and the Near East'. Though much of the material that he mentions was from central and eastern Europe, the cited outlying records include a reliable published one from the Netherlands (de Meijere, 1919). Pierre (1924) records two species (*cinerascens* Mg. and *livescens* Lw.) from France, and whilst one cannot now be confident of the species determinations, and neither agrees with *fuscescens* from his descriptions, it is worth noting that he records the

genus from as near as the environs of Paris. It is surprising that *Dicranoptycha* has not been detected in Britain before but the occurrence of *fuscescens* in Kent, close to the continent, may indicate that the species has a very restricted south-eastern distribution in this country. The remaining four European species are seemingly of more restricted distribution, with eastern Europe as the most favourable area.

The genus *Dicranoptycha* is a member of the sub-family Limoniinae, tribe Limoniini. The unbranched wing vein R_2+3 should readily place it in the tribe (this vein is otherwise simple only in some Cylindrotominae). The combination of 16 antennal segments, wing vein r present and $m-cu$ beyond the end of the upper basal cell (i.e. below discal cell) should provide an easy distinction within the tribe. In the standard key by Coe (1950, p. 23) the genus would run to couplet 8, but would not key further because of conflicting wing vein combinations. It is worth noting that the tip of R_1 is long and horizontal as in the sub-genus *Limonia* and that R_s is short and elbowed near the base.



Wing of *Dicranoptycha fuscescens* (Schummel) based upon a specimen from Moravia.

Within the genus, *fuscescens* is distinct in having a grey thorax contrasting with a dark brown abdomen plus a black flagellum contrasting with pale basal antennal segments. A brief description of the British male specimen is as follows: both wing length and body length 10 mm. Head grey, eyes touching below, widely separated above. Rostrum very short, palps black. Antennae short, scape and pedicel pale brown, flagellum black except narrowly pale on basal segment. Thorax with pleura and dorsal surface grey, prescutum with three dull dark brown stripes, the central one narrowly and faintly divided by a grey line. Halteres pale brown, legs pale brown, except coxae with faint greyish hue, anterior tips of trochanters black, tips of femora faintly darkened and distal half of tarsi darkened. Abdomen dark brown, somewhat paler beneath, segments 7 and 8 darkest. Hypopygium orange brown.

The habitat of the British specimen was a well drained site just inside deciduous woodland with a field layer of bracken (*Pteridium aquilinum* (L.) Kuhn.), bramble (*Rubus fruticosus* L. agg.) and locally nettle (*Urtica dioica* L.). Whilst several soil types were present in the collecting area (including chalk, sand and gravel) it is probable that the specimen was taken on Thanet Sand or Plateau Gravel or a mixture of the two at ancient earthworks.

Darenth Wood, near to the present fringes of South-east London, was one of the famous entomological localities of the nineteenth century where G. H. Verrall, among others, collected many rare insects. The woodland has suffered greatly since that time, so it is particularly pleasing to see this old locality yield yet another species new to Britain.

We should like to thank Mr. A. M. Hutson for confirming the identification. The specimen has been placed in the British Museum (N.H.).

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CYCLOPHORA LINEARIS HÜBNER - AN UNUSUAL FOODPLANT

Whilst collecting leaf mines of *Stigmella myrtillella* Stainton on bilberry (*Vaccinium myrtillus* L.) at Llandogo, Monmouthshire on 8.viii.1973, I found on the same foodplant a geometrid larva which I did not recognise. It pupated without a cocoon, attached to a silk pad spun on the polythene covering of the larval container. The adult emerged on 24.iii.1974 and proved to be *Cyclophora linearia* Hübner (Lep., Geometridae) (Clay Triple-lines). South, Stokoe and Meyrick give beech (*Fagus sylvatica* L.) as the only foodplant of this species, but Allan (*Larval Foodplants*), who also gives beech, adds in parentheses 'In France it feeds also on Oak, Birch and Bilberry'. The bilberry was growing in wet, boggy ground immediately above the Wye Valley; the valley slopes are covered in mixed woodland which includes plenty of beech.

A. M. EMMET

PROCEEDINGS

13th DECEMBER 1973

The President, Mr. J. M. CHALMERS-HUNT, in the Chair

The following new members were declared elected: Miss A. L. Cameron, Dr. G. Harris, Messrs I. C. Beavis, G. E. Higgs, P. J. Johnson, C. Marson, L. McLeod and A. G. Parker.

EXHIBITS

Col. A. M. EMMET—Set specimens of *Nepticula auromarginella* Richardson, bred 12-15.xi.73 from larvae taken 21.x.73 at Chickerell, near Weymouth, Dorset. This is the only known locality in England, but a single specimen has been reared from the Burren, Co. Clare. Abroad the moth is found in maritime situations from the south of Sweden to France. The larvae feed in gallery mines in the leaves of *Rubus fruticosus* L. agg. and are more or less continuously brooded, for larvae have been taken throughout the winter. Continental climate would therefore be fatal to them. The locality at Chickerell consists of the hedgerows around a field used for grazing horses. The field is surrounded by factories, but the house lived in by Richardson, who discovered the species about 1890, still stands to one side of the field.

Mr. R. I. VANE-WRIGHT—A specimen of the crane-fly *Tipula mutila* Wahlgren taken by Dr. F. H. Haines at the turn of the century, also at Chickerell. This species is only recorded from Chickerell and an unspecified locality in the New Forest.

Mrs. J. O. I. SPOCZYNSKA—Two live imagines of *Danaus plexippus* L. (Lep., Danaidae) which had apparently mated and laid eggs although kept in the dark.

COMMUNICATIONS

Commenting on Mrs. Spoczynska's exhibit, Mr. Vane-Wright said that it had been shown that *D. plexippus* could be readily hand-paired and this might explain why mating had occurred in apparently unsuitable conditions.

Prof. C. A. Clark gave a talk entitled 'A comparison of the mimetic control in *Papilio* and *Hypolimnas* butterflies—some observations from breeding experiments'. It was illustrated with slides and followed by a discussion.

10th JANUARY 1974

The President, Mr. J. M. CHALMERS-HUNT, in the Chair

EXHIBITS

The PRESIDENT—*Pammene luedersiana* Sorhagen, a tortricoid moth new to Britain. The specimen was in the collection of Mr. G. H. Youden of Dover and had been taken by the late D. G. Marsh at Aviemore, 23.v.1964. It had been determined by Dr. J. D. Bradley.

Mr. G. PRIOR—Living specimens of *Ptinus tectus* Boiel. (Col., Ptinidae) found in a carpet at Ruislip on 3.i.74.

Mr. JACKSON—A short series of *Eupithecia succenturiata* L. (Lep., Geometridae) taken at Barking, Essex in August, 1973. These showed a range of variation.

Col. A. M. EMMET—*Acherontia atropos* L. (Lep., Sphingidae) taken at Cambridge

at the end of May, 1973 and *Nepticula acetosae* Staint. (Lep., Nepticulidae), the largest and smallest recorded British moths.

COMMUNICATIONS

Mr. D. Claugher gave a talk entitled 'Interest in Insects' which he illustrated with slides.

24th JANUARY 1974

102nd ANNUAL GENERAL MEETING (with which was combined the Ordinary Meeting)

The President, Mr. J. M. CHALMERS-HUNT, in the Chair

The death was announced of Mr. P. B. M. Allen, a prominent non-member. It was also announced that Mr. D. A. Ashwell and Capt. K. J. Hayward died in 1972, but the news had only just reached the Society.

The following new member was declared elected: Mr. G. B. Mason.

EXHIBITS

Mr. R. F. BRETHERTON—Series of autumn and winter flying geometrid moths, *Erannis defoliaria* Clerck, *Agropis leucophaea* D. & S., *Colotois pennaria* L., *Apocheima hispidaria* D. & S., *A. pilosaria* D. & S., all from west Surrey, to show the range of variation.

Mr. G. PRIOR—*Eupithecia tripunctaria* H.-S. (*albipunctata* Haw.) (Lep., Geometridae), taken indoors at Harrow, Middx., 11.i.74 and *Dysstroma truncata* Hufn. (Lep., Geometridae) also taken at Harrow, 15.i.74.

Mr. A. E. STUBBS—Diptera from Singapore, January 1973: *Themara* sp. (Tephritidae), a hammer-headed trypetid fly; *Teleopsis* sp. (Diopsidae), a representative of a family not found in Britain, the eyes are placed at the end of long stalks; *Toxorhynchites* sp. (Culicidae), a mosquito whose larva is predatory on other mosquito larvae, the proboscis of the adult is characteristically bent into a hook.

Mr D. STIMPSON on behalf of Mr. N. Bond—*Zeuzera pyrina* L. (Lep., Cossidae) larva in hornbeam from Nazing, Essex.

COMMUNICATIONS

Col. A. M. EMMET said he had bred *Phyllonorycter muellerilla* Zell. (Lep., Lithocolletidae) from mines taken in Westmorland (Arnside), 26.xii.73, on sapling oaks. The mine itself is indistinguishable from those of *P. quercifoliella* Zell., but the cocoon is formed in a chamber which is shaped like an open 'U'.

The Council's Report was read on behalf of the Secretary by Mr. F. D. Buck and Mr. G. Prior moved its adoption; Mr. S. A. Knill-Jones seconded the motion which was carried.

The Treasurer read and moved the adoption of his Report and Accounts which were seconded by Mr. C. O. Hammond and also carried.

The Curator's Report was read and moved by Mr. A. E. Gardner and seconded by Dr. M. G. Morris; the Editor's Report by Mr. F. D. Buck and R. W. J. Uffen; the Librarian's Report by Mr G. S. E. Cross and Mr. D. E. Wilson and the Hering Memorial Research Fund by Mr. R. F. Bretherton and Mr. F. D. Buck. All were carried.

The President declared the following Officers and Ordinary Members of Council elected: *President*, C. MACKECHNIE-JARVIS; *Vice-Presidents*, J. M. CHALMERS-HUNT and Dr. M. G. MORRIS; *Treasurer*, R. F. BRETHERTON; *Secretary*, G. PRIOR; *Editor*, Dr. P. A. BOSWELL; *Curator*, A. E. GARDNER; *Librarian*, G. S. E. CROSS; *Lanternist*, C. O. HAMMOND; *Ordinary Members of Council*, Lt.-Col. A. M. EMMET, B. F. SKINNER, W. PARKER, P. J. BAKER, Miss V. DICK, P. J. CHANDLER, G. R. ELSE, D. E. WILSON, J. HEATH and L. K. EVANS.

Mr. J. L. Messenger and Mr. A. G. Stoughton-Harris were elected auditors for Council and Members respectively.

There were no motions or questions under Bye-Law 26(b).

Mr. J. M. Chalmers-Hunt read his Presidential Address and then inducted the new President, Mr. C. MacKechnie-Jarvis, into the chair. Mr MacKechnie-Jarvis thanked Mr. Chalmers-Hunt for his past services and asked his permission to publish his Address, which was readily given.

A vote of thanks to the Officers and Council was moved by Dr. C. G. M. de Worms and a vote of thanks to the Auditors was passed unanimously.

COUNCIL'S REPORT 1973

Your Council is happy to record 1973 as a year of solid progress. The increase in the number of new members elected has continued, the resignations, following the increase of subscriptions, have been less than was feared and the total membership now stands at 663 a net increase of 22. Four parts of the Proceedings were published and, in addition, the Society's history *The New Aurelians* which it had been hoped would appear in our Centenary Year was published and distributed to the members. This well written, amusing and informative work by Dr. James is in steady demand by non-members, libraries, other societies, etc.

The Annual Dinner was again held at Imperial College and attended by 128 persons, less than in Centenary Year but greater than any other year. The Annual Exhibition was held again at Holland Park School. The number of persons attending was about the same as last year. The number of exhibitors, 66, was lower than last year but the standard of the exhibits was very high. Adequate seating arrangements and the provision of morning coffee, light lunches and teas has added considerably to the comfort of those attending. The task of providing the refreshments was again undertaken by the wives and daughters of members to whom we should like to give our thanks. Twenty-one indoor meetings providing interesting and varied programmes were held and despite occasional transport difficulties were all well attended. Twenty Field Meetings were organised, including a two day expedition to France and five days on the Island of Colonsay in the Hebrides. The attendance as always at Field Meetings was varied, according to circumstances, weather, etc.

The Council elected Dr. B. J. MacNulty, a past President and Secretary, to be an Honorary Member.

In April Mr. S. A. Williams resigned as Librarian for business reasons and the Council appointed Mr. G. S. E. Cross as Librarian till the end of the year. The lease of the Society's rooms at the Alpine Club having expired, the terms of a new lease have now been agreed and the formalities are at present being completed.

At a Special meeting on the 11th October, a resolution to raise the entry fee and annual subscription was put and carried unanimously. The previous rates had been in force since 1964. Considering the substantial rises in costs during the past ten years, this is a tribute to the sound management of the Society's finances.

The Society again maintained a stall at the Annual Exhibition of the Amateur

Entomologists' Society and as a reciprocal arrangement the Amateur Entomologists' Society placed their publications on show at our exhibition.

Mr. F. D. Buck the Editor and Mr. M. Shaffer the Lanternist are not standing for re-election in 1974 Mr. D. Carter the Indoor Meetings Secretary will also not seek re-election after he has completed the arrangement of the 1974-75 programme. The Council wishes to record its thanks to Mr. F. D. Buck, Mr. M. Shaffer, Mr. S. A. Williams and Mr. D. Carter for their long years of service in their offices. It also thanks those Ordinary Members of Council who have completed their two year term, Mr. and Mrs. T. G. Howarth and Miss V. Dick for their work on refreshments at the Alpine Club, and Mrs. K. Smiles for her work on the Society's Christmas Card.

TREASURER'S REPORT

The accounts for 1973 have been approved by our auditors, Mr. Messenger and Mr. Stoughton-Harris. They show a very good result: a surplus on Income and Expenditure Account of £157, instead of a small deficit in 1972 and the larger one for 1973 which I budgeted for last March. This is because, though expenditure has risen, with inflation, much as expected, income has gone up very much faster. Subscriptions were up by £47, reflecting both the continued rise in subscriptions and also much hard work by the Assistant Treasurer in reducing the arrears. Interest from our investments and bank deposit is also well up. But the most striking contribution comes from what may be called the 'fringe' financial activities: a profit of £86 from good sales of a cheaper but attractive Christmas card; disposal of an extraordinary number of ties; a surplus on refreshments at the exhibition, which paid for nearly half the cost of hiring the Holland School hall; a small profit on the annual dinner; thrifty disposal by the Curator of old cabinets and store-boxes (without, this year, any purchase of new ones). Success in these fringe activities depends on the enthusiasm of a large number of members and of their wives. The Society should thank them very warmly not only for their work, but also for the support which it gives to our finances. Finally, we have had two considerable donations, from Dr. Peet and from Mr. and Mrs. Howarth, as well as a number of smaller ones. As these are intended to be used for buying cabinets or equipment, which have not been available yet, I have put them in the Reserve Fund and they therefore are not included in our surplus on Income Account.

Among the other Special Funds, the Centenary Fund still has a balance of £170, to which outside sales of *The New Aurelians* have contributed over £30—and they are still being asked for. The Fund has been kept open until Council has decided what to do with the balance. The Hering Memorial Research Fund has again spent less than its income; and the Housing Fund has been increased by interest and some small donations. The Library Fund has grown suddenly rich, from the sale of a set of the Proceedings and from two Life Membership fees; it now has a balance of £242.

Despite these good results in 1973 I do not regret the decision, which has just taken effect, to raise the subscription rates. With the renewal of our lease from the Alpine Club, our rent has been moderately increased from £286 to £356. It is also sadly clear that we shall need yet more income to keep pace with inflation in 1974 and thereafter, and it is wise to start with a little fat.

For 1973 the black spot—which does not show in the Accounts or Balance Sheet because our investments are there valued at cost—is that because of the stock market collapse the market value of our investments at the end of the year was in total a little below cost, instead of 20% above it at the beginning. But our

Statement of Accounts

ical and Natural History Society

British Entomo

BALANCE SHEET—31st DECEMBER 1973

1972		1973		1973	
£	p.	£	p.	£	p.
LIABILITIES					
<i>Special Funds—</i>					
<i>Housing</i>					
1107 24	1167 24				
—	9 06				
60 00	62 00	1238 30			
<i>Centenary</i>					
557 12	169 08				
103 69	36 97				
20 00	12 00				
491 65	47 20	170 85			
<i>Library</i>					
67 22	122 53				
62 43	157 28				
—	13 00				
7 12	50 35	242 46			
<i>Housing Memorial Research Fund</i>					
1948 41	2001 95				
140 11	160 00				
86 57	101 03	2060 92			
<i>Reserve</i>					
759 66	590 92				
38 00	113 00				
216 74	703 92				
54 53	127 57				
598 38	565 70				
<i>General Fund</i>					
3118 19	3102 14				
16 05	157 35	3259 49			
<i>in the year</i>					
7806 77		8369 21			
ASSETS					
<i>Investments at cost:—</i>					
£100 I. C.I. Ordinary Stock					
220 67	220 67				
248 45	248 45				
712 10	712 10				
1398 21	1398 21				
350 00	350 00				
541 58	541 58				
500 35	500 35				
700 25	700 25				
413 40	413 40				
—	—				
219 97	219 97				
302 66	302 66				
298 65	298 65				
303 81	303 81				
294 04	294 04				
300 01	300 01				
6876 15	6876 15				
187 49	187 49				
681 20	681 20				
61 93	61 93				
<i>Sundry Debtors</i>					
<i>Cash at Bank:—</i>					
<i>Deposit Account</i>					
<i>Current Account</i>					
The value of the Society's library, collections, stock of publications, Christmas cards and ties is not included.					
7806 77					
8369 21					

British Entomological and Natural History Society
Statement of Accounts

PUBLICATIONS ACCOUNT			
	1972	1973	1973
	£	p.	£
To Printing <i>Proceedings</i> for 1973		912 50	
Blocks and colour-plates " "		39 54	
Postage " "		70 33	
Insufficient Provision for previous Year		—	
List of members and addresses		—	
Centenary History (printing and blocks)		335 11	
Sales of History-transferred to Centenary Fund		30 72	
		<u>1388 20</u>	
		1117 14	
			1388 20

holdings as a whole have not fared worse than shares generally; we have no present need to sell any and we must hope that their market value will recover.

REPORT ON THE PROFESSOR HERING MEMORIAL RESEARCH FUND, 1973

The Management Committee for the year consisted of the President (Mr. J. M. Chalmers-Hunt) and the Hon. Treasurer (Mr. R. F. Bretherton), *ex officio*, and Dr. K. A. Spencer, Prof. T. R. E. Southwood, and Colonel A. M. Emmet, appointed by Council.

Disappointingly no applications for awards from the Fund in 1973 had been received by the advertised date of 30th June, which had itself been extended owing to publication difficulties. In these circumstances it was decided to make a grant of £100 to Dr. K. A. Spencer towards his expenses for an expedition to study and collect Agromyzidae in the highlands of New Guinea during October and November 1973 as a part of his comprehensive work on the world distribution and importance of this group.

Advertisements for applications for awards from the Fund during 1974 have been sent to the leading entomological journals, with a closing date of 31st March. Several preliminary inquiries have already been received.

EDITOR'S REPORT

This is the last meeting at which I shall be taking the minutes since I relinquish the office of Editor this year. I was first elected to this office in 1956 and now hand over the responsibility to Dr. P. A. Boswell.

One of the first things I did when I originally undertook the office was to compile a style for our publication which appeared in 1959, in our *Proceedings* for 1958. Since that time it has, regrettably, been studiously ignored by you; it is to be hoped it will not be ignored by Dr. Boswell. There is no doubt the opportunity for change and he will have his own ideas but consistency and regularity should not be sacrificed.

My predecessor used to quietly complain that members seldom gave him a note of their exhibit; over the years we have considerably improved this situation. There is still, however, an unsatisfactory state with regard to communications. These should, and to a large extent do, provide a useful record of the season's progress, but you stand up and run off a list of species, using common names, trivial names alone and some favourite obsolete names, with reckless abandon, give localities that can be confusing, add a date or two, and sometimes refer to last Tuesday fortnight, without thought of the Editor taking minutes. Now I can scribble at a fair rate of knots and I have difficulty in getting more than 80 per cent; even then I provide a certain amount of entertainment for you in correcting the minutes. You can, and should help your new editor by writing down the details of your communications for him; it will take you only a few moments and save him a great deal of trouble, not to mention the increase in value it will give to your *Proceedings*.

In the same vein, it should be quite unnecessary for your Editor to have to write to you and ask for your field meeting report—he has a great deal of other things to do.

Once again this year we produced four parts of *Proceedings*: Volume 5 part 4, and Volume 6 parts 1, 2 and 3. Volume 6 part 4 is at the moment in press and were it not for the industrial situation necessitating a three-day week would undoubtedly appear in February. It may yet be possible, but times are difficult.

I will see this part to its conclusion so that Dr. Boswell can start fresh on a new volume. The index for Volume 5 appeared during the year and that for Volume 6 will be completed by me and the copy supplied to Dr. Boswell for printing.

Our year's publication consisted of 128pp and 9 plates and included several important papers; notably Professor Hinton's Presidential Address on insect coloration, Chandler's two papers on new British Diptera and Muggleton's work on the Blue Butterflies in the Cotswolds.

I wish Dr. Boswell every success and ask you to give him all the support you can with contributions and a little care in the preparation of exhibit notes, communications and field meeting reports.

LIBRARIAN'S REPORT

It has been the custom for the Librarian to give a detailed list of books purchased or donated during the year, together with donors' names. I regret to say that, as a result of my ignorance, I have taken no note of books received since I took over from my predecessor and my list is, therefore, incomplete. I offer my sincere apologies to those gentlemen who have donated books if their generosity should, on this occasion, go unrecorded.

When I took over from Mr. Williams I had not the faintest conception of what the duties of a Librarian comprised. Fortunately for me, our energetic and tireless Secretary, Mr. Prior, has had experience in this line and with much prompting and prodding from him and, by no means least, with his active and ever-ready assistance, I am learning quickly.

We are, at the moment, engaged in counting the books. I ask the forbearance of Members for any inconvenience this may cause them. Books may be borrowed in the usual way, but returned books should not be replaced on the shelves. A large cardboard box has been placed in the further basement room to contain these. It is hoped that when the count is complete, a supplement to the existing catalogue will be produced.

The shelves which house the bound periodicals have been lined with hardboard and this, I am sure, has been much appreciated by all who use them. Mr. Bradford was generous enough to provide the hardboard already cut to size. I am indebted to Mr. Bradford also for providing the materials and erecting the new shelving in the outer basement room. This is unlikely to benefit Members because the shelves are too high for easy access, but they provide much needed storage space and I am very grateful indeed.

I regret to say that no periodicals have been bound during the year. This I intend to rectify during the coming year.

CURATOR'S REPORT

During 1973 the major task has been to clear the cabinets of Lepidoptera from the Coulson, Sperring and Eagles bequests, to incorporate specimens required for the Society's Collection and to place the remainder in the duplicate collection. Well over a hundred drawers have been emptied and I am grateful to Mr. W. Parker for his valuable assistance.

Mr. E. S. Bradford has continued to work on the Microlepidoptera and Mr. P. J. Chandler on the Diptera.

Mr. R. M. Payne's gift of Diptera, Tipulidae has been received and work has commenced in housing them in a Hill unit. Work has continued on the Dr. A. M. Massee collection of Coleoptera and the rearrangement of the Hemiptera-Homoptera is now completed. A start has also been made on rehousing the Ortho-

pteroid orders and it is hoped to also deal with the Odonata and Trichoptera during 1974.

During the year the Society was notified of the G. A. Cole bequest of Lepidoptera and cabinets, this to be received after the British Museum (N.H.) have removed such specimens as they require. Another valuable addition has been the F. A. Swain bequest. This consisted of both Macro and Microlepidoptera, a small cabinet, storeboxes, and collecting equipment. The Microlepidoptera have already been incorporated by Mr. Bradford and the cabinet utilised for duplicates.

One cabinet and a number of storeboxes have been sold. Further revenue has been received by the sale of duplicates at the A. E. S. Exhibition and the Society thanks the members responsible for this new venture.

The thanks of the Society are due to the following members for notable accessions: Major D. B. Baker (Lepidoptera), Mr. F. D. Buck (Lepidoptera), Mr. A. E. Gardner (Coleoptera, Hemiptera and Saltatoria), Cmdr. W. L. R. E. Gilchrist (Lepidoptera), Mr B. Goater (Lepidoptera), Dr. B. J. MacNulty (Lepidoptera), Mr. G. Prior (Lepidoptera), Mr. A. E. Stubbs (Diptera), and Mr. R. D. Weal (Coleoptera).

Four microscopes have been placed on loan and a number of Coleoptera have been loaned to members for critical examination. Finally, I am grateful to our assistant curator Mr. E. S. Bradford for his continued help in so many ways.

PRESIDENTIAL ADDRESS

J. M. CHALMERS-HUNT

You will have learned from the reports of the Council, of the Hon. Treasurer and of other officers that despite the present difficult times, the Society continues to flourish, and that the membership has now reached the record number of 663.

I wish to say how very much I have enjoyed the privilege of being your President. My term of office, now nearly over, has been particularly pleasant owing to help and support given me by our Secretary Mr. Prior, our Editor Mr. Buck, our Treasurer Mr. Bretherton and the other members of Council, and it is my real pleasure to express my gratitude to them all.

It is my sad duty to refer to the loss we have suffered by death of ten of our members, seven of whom have died since the last A.G.M. and three others in 1972.

Mr. G. A. COLE who died on 15th February aged 70, was elected a member in 1934. He was an enthusiastic collector of Lepidoptera and his attractively displayed insects at many of the Annual Exhibitions are well remembered. Among his more notable captures were *Luperina zollikoferi* Freyer and *Diasemia ram-burialis* Duponchel. Mr. Cole has bequeathed part of his collection to the Society.

Commander G. W. HARPER who joined the Society in 1943 was born on 4th August 1902 and died on 10th April last. He lived for more than 20 years at Newtonmore, Inverness-shire, and had a considerable knowledge of the Macrolepidoptera of that district as evidenced by a series of papers he wrote in the *Entomologist's Record* from 1954-1965. Even when living in Scotland he seldom missed the Annual Dinner and Exhibition and his exhibits were always among the most noteworthy.

Lord TALBOT de MALAHIDE, F.L.S., who was elected a member in 1942, was born on 1st December 1912 and died on 10th April last. He was interested in the Lepidoptera, but owing to his residing in Ireland was seldom able to attend our meetings.

Mr. F. A. SWAIN was born on 21st July 1908 and died on 14th May last, and like his father the late A. M. Swain was interested in Lepidoptera and wild plants.

Frank Swain was a good field worker and an acute and careful observer of the Microlepidoptera. His widow has graciously presented his collection to the Society.

Mr. John MOFFAT of Edinburgh was born on 4th June 1935 and died tragically on 31st July last, the result of a motor accident. He was elected in 1964 and his interests were in the Coleoptera and the general study of entomology.

Mr. G. J. ASHBY of the Insect House at the London Zoo was born on 24th February 1917 and died on 15th August last. He joined the Society in 1965 and will be remembered by many for his wonderful displays of living insects at the Annual Exhibitions.

Mr. F. H. LEES who died on 19th November last was notable for the remarkable number of rare immigrant Lepidoptera that he took. He will also be remembered by the writer as a kind and interesting correspondent. In 1934, Lees spotted a blackish moth in an old bolt hole in a post at Dungeness and it being partly hidden he thought at first it was a Cabbage Moth, but on removing it saw it was the Alchemist (*Catephia alchymista* D. & S.). Among other great rarities he took were *Conistra erythrocephala* D. & S. and *Lithophane furcifera* Hufnagel. We understand that his magnificent collection has found a home in the Exeter Museum. Frank Lees was born on 16th May 1883 and was thus in his 91st year at the time of his death.

I must also mention the following members who died in 1972, but of whose decease we were not made aware until after the last A.G.M.

Captain K. J. HAYWARD of Tucuman, Argentina, was born in Somerset, 7th March 1891 and died on 5th May 1972. He was elected in 1923 and was thus one of our oldest members. Hayward was a great authority on the fauna of the Argentine and once read to the Society a fascinating account of some of his experiences there (of. *Proc. S. Lond. ent. nat. Hist. Soc.* 1935-36:55-83)

Mr. S. F. P. BLYTH who was elected in 1925 died on 12th December 1972 at the advanced age of 89. He was a keen Lepidopterist and once told me that one of his greatest thrills was when he took a *Daphnis nerii* L. at the flowers of tobacco plant in his garden at Chislehurst in 1926.

Mr. Derek A. ASHWELL who died at the end of 1972, but of whose death I was only notified last month, joined the Society in 1950. He was one of the compilers of the *Macro-lepidoptera of Bishop's Stortford and District*, published in the *Transactions of the Bishop's Stortford and District Natural History Society* in 1949.

We have already stood as a tribute to the memory of our lost friends and I will not ask you to do so again.

I now propose briefly to review the past year in regard to some of the more interesting Lepidoptera that have been noted, as well as to mention those species of all insect orders that have been added to the British List in 1973.

1973 has been very good for immigrants, among which the appearance of *Colias croceus* Fourc., *Acherontia atropos* L., *Rhodometra sacraria* L., *Leucania vitellina* Hübn., *Eublemma ostrina* Hübn., *Eurois occulta* L. and *Herse convolvuli* L. is noteworthy; also, larvae of the latter which are so seldom observed.

But more noteworthy still is the occurrence of single examples of the Long-tailed Blue (*Lycaena boeticus* L.), *Hypena obesalis* Treitschke (only the third British record), *Hyles euphorbiae* L., and three specimens of the Camberwell Beauty (*Nymphalis antiopa* L.)

However, perhaps the most remarkable feature of 1973 has been the extraordinary plenteousness of larvae and moths of the Bedstraw Hawk (*Hyles gallii* Rott.), a full account of which we look forward to from Dr. de Worms.

The year was also exceptional for the Milkweed (*Danaus plexippus* L.), of which nine specimens are recorded as having been seen or taken. I am much indebted to Mr David Carter of the British Museum (N.H.) for supplying me with particulars of the Fowey specimen, and to Mr. R. F. French (Rothamsted Experimental Station) for details of all the others. The butterflies appeared over a wide range from Cardiganshire in the west to Surrey in the east and there were also noted in the Scilly Isles, Cornwall, Devon and in Hampshire. The specimen taken at Fowey by the schoolboy Tim Williams seems to have been a case of beginner's luck.

July (beginning). Kingsclere, Hants., one seen by a Mrs D. Freeman. Identified from illustrations but believed to be correct.

August 25. One seen over the River Tamar between Halton Quay and Weir Quay on the Devon-Cornwall border. Mr Short.

September 16. Yspyt Ystwyth, Cardiganshire. One caught between 2 and 3 p.m. J. J. Richards.

September 19. Fowey, Cornwall. One caught at midday on school playing fields by a schoolboy Tim Williams, who was sent out by his teacher to bring back some butterflies to photograph for an examination. Reported by J. T. O'Neill.

September 20. One seen flying along cliff path, west of Porthleven, Cornwall. Positive identification by A. J. Moore.

September 30. One female captured alive near Porlock, Devon. Captor unknown. Reported by Dr. H. M. Chappel.

October 4. One seen by five people at Garrison Walk, St. Mary's, Isles of Scilly.

October 4 (?). Another seen on St. Mary's, Isles of Scilly.

October 19. One seen and photographed by Mrs. M. J. Batchelor at Oxted, Surrey. Identity confirmed.

Three species of Lepidoptera were added to the British List on 1973.

They are:—

(1) *Pammene luedersiana* Sorhagen (Tortricioidea). A male taken by the late Dudley G. Marsh, labelled Aviemore, 23rd May 1964, which remained unrecognised in the collection of G. H. Youden until 1973. Spotted by the writer as probably new to Britain, he submitted it to Dr. J. D. Bradley who determined it genitally.

(2) *Coleophora fuscicornis* Zeller (Tineoidea). Moths discovered by Col. A. M. Emmet at Fingringhoe, Essex, in May 1973 flying over *Vicia angustifolia* L., upon which plant he collected cases later in the season and previous to which the foodplant was unknown.

(3) *Ectoedemia erythrogenella* de Joannis (Tineoidea). Mines with larvae discovered by Col. Emmet on *Rubus* at Portland, Dorset, in October 1973 and later by him at Benfleet, Essex.

For most species of other insect orders added to the British List in 1973, I am indebted to Mr. A. A. Allen, Mr. A. E. Gardner, Mr. C. MacKechnie Jarvis and Mr. K. G. V. Smith for kindly drawing my attention to them, and in some cases supplying particulars.

COLEOPTERA. Nine species, eight of which have been in collections for years under various wrong names or not separated from their allies. One, however, actually taken for the first time in Britain in 1973, is the staphylinid *Bledius crassicornis* Boisduval & Lacordaire, a colony of which was discovered in April at Totland Bay, Isle of Wight, by David Appleton—a very energetic and successful young collector. The others are: *Sepedophilus* (*Conomosus*) *lusitanicus* Hammond, *S. testaceus* (F.) and *S. constans* (Fowler) (all Staphylinidae), of which

specimens have stood in British and European collections as *Conosoma testaceum* (F.), *C. pubescens* (Grav.) or *C. pubescens* var *constans* Sharp (cf. Hammond, 1972. *Ent. mon. Mag.*, **108**:130-65). *Lathridius anthracinus* Mannh., and *L. pseudominutus* (Strand) (Lathridiidae); from notes and specimens found among the effects of the late W. O. Steel (cf. Tozer, 1972. *Ent. mon. Mag.*, **108**:193-199). *Scymnus femoralis* Gyll., restored to the list; *S. schmidtii* Fursch, new to list; and *Nephhus bisignatus* Bohemen, new to list (all Coccinellidae) (cf. Pope, 1973. *Ent. mon. Mag.*, **109**: 3-39).

HYMENOPTERA. Twelve species are added including a mason or 'key-hole wasp' *Ancistrocerus claripennis* (Thomson) (Vespidae), formerly overlooked among the other two species, *A. parietum* (L.) and *A. gazella* (Panz.) (cf. Spooner, 1972. *Ent. mon. Mag.*, **108**:181-184). The other species which are all chalcidoids are as follows: *Schizonotus sieboldi* (Ratz.) (Pteromalidae), several males swept from *Salix cinerea* L., Morfa Harlech Nature Reserve, Merionethshire (cf. Graham, 1973. *Entomologist*, **106**: 59). *Arrhenophagus chionaspidis* Aurivillius (Encyrtidae), three specimens found in B. N. Blood coll. in Hope Dept., Oxford (cf. Graham, *Entomologist*, **106**:71). *Halticoptera elongatula* Graham, Storrington, Sussex, H. W. Daltry, in Hope Dept., Oxford; *H. aureola* Graham, 2 males, 1 female near Southgate, Middx.; *H. triannulata* Erdös, near Southgate, Middx. (cf. Graham, 1972. *J. ent.* (B) **41**:103-106). *Gonatocerus palduis* (Debauche); *G. populi* (Vigiani); *G. chrysis* (Debauche); *Doriclytis vitripennis* Förster; *Polynema valkenburgense* Soyka; *P. permagnum* Soyka (cf. Graham, 1973. *Ent. Gaz.*, **24**(1): 47-50).

PROTURA. Four species new to the British Isles: *Eostentomon delicatum* Gisin; *Protentomon barandiarani* Condé; *Acerentulus cunhai* Condé; *A. tragardhi* Ionescu (cf. Gough & Waghorne, 1972. *Ent. mon. Mag.*, **108**:166).

COLLEMBOLA. Four species added to the list: *Willemia aspinata* Stach; *W. buddenbrockii* Hüther; *W. intermedia* Mills; *W. scandinavea* Stach (all Hypogasturidae) (cf. Gough, 1972. *Ent. mon. Mag.*, **108**: 80-83).

DICTYOPTERA. One species, *Polyphaga aegyptiaca* (L.) taken at Folkestone, Kent, but a suspected importation (cf. Chalmers-Hunt, 1973. *Ent. Rec.*, **85**: 68).

HEMIPTERA-HOMOPTERA. One species, *Mindarus obliquus* (Chol.) (Aphidoidea), previously confused with the Silver-fir Aphid, *M. abietinus* Koch (cf. Carter & Eastop, 1973. *Ent. mon. Mag.*, **109**: 202-204).

HEMIPTERA-HETEROPTERA. One species, *Orthops basalis* (Costa) (Miridae), colony at Loch Davan near Dinnet, Aberdeenshire (cf. Woodroffe, 1973. *Entomologist*, **106**: 183-186).

ACARINA. One species, a tarsonemid mite, new to science, *Tarsonemus aculeus* Alford (Prostigmata), found in association with galls of *Eriophyes gallarumtiliae* (Turpin), Kegworth Station, Sutton Bonnington, Notts. (cf. Alford, 1972. *Ent. mon. Mag.*, **108**:123-128).

DIPTERA. Seven species, of which two are particularly noteworthy as being new to science, an agriomyzid on bracken, *Phytoliriomyza pteridii* Spencer (cf. Spencer, *Ent. Gaz.* **24**: 315); and an empid from Inverness-shire, *Tachydromia acklandi* Chvala (cf. Chvala, 1972. *Ent. mon. Mag.*, **108**: 214-218). Otherwise, probably the most remarkable addition is the strikingly marked (in the female) empid, *Rhamphomyia marginata* F. taken by Messrs. L. K. Evans and E. H. Wild at light at Ham Street, Kent (cf. Chandler, 1973. *Proc. Brit. ent. nat. Hist. Soc.*, **6**(3):73-76). The other new species are *Phaonia mediterranea* Hennig (Muscidae) (cf. Pont, 1972. *Ent. mon. Mag.*, **108**: 238-239); *Scatopse lapponica* Duda (Scatopsidae) (cf. Hutson, 1972. *Ent. mon. Mag.*, **108**: 200-201); *Molophilus lackschewitzianus* Alexander (Tipulidae) (cf. Stubbs & Chandler, 1973. *Proc. Brit. ent. nat. Hist. Soc.*, **6**(3): 85-87). In a paper by Murray (*Proc. R. Irish Acad.*, **72B**(16))

entitled 'A List of the Chironomidae known to occur in Ireland', several names are recorded as British for the first time, but it has been suggested that many of the determinations are probably inaccurate and will need confirmation.

The President then delivered the second part of his Address entitled 'Notes on the Coleophoridae' which he illustrated with colour slides by Mr R. W. J. Uffen. This part of the Address will appear in the next issue of the Proceedings.

14th FEBRUARY 1974

The President, Mr. C. MACKECHNIE JARVIS, in the chair.

EXHIBITS

Mr. E. S. BRADFORD—Specimens of *Tinaea pelliionella* L. (Lep., Tinaeidae) from a swallow's nest taken at Chislet Broomfield, Kent, in 1973. Specimens of *Coleophora alticolella* Zell. (Lep., Coleophoridae) from Spofforth, near Harrogate, Yorks., in 1972. Specimens of *Coleophora glaucicolella* and *C. caespititiella* Zell. from the East Blean area of Kent in 1973.

Mr. C. O. HAMMOND—A male specimen of *Stethophyma grossum* (L.) (Orth., Acrididae) (Large Marsh Grasshopper). This was taken 21.viii.1973 from a locality in Surrey and is a new country record.

Dr. M. G. MORRIS—Examples of the three species of *Gymnetron* Schönherr (Col., Curculionidae) occurring in the British Isles which feed on semi-aquatic species of *Veronica*. 1. A single specimen of *G. beccabungae* (L.) from Mound Woods National Nature Reserve, Sutherland. Taken by general sweeping when collecting with Mr. G. E. Woodroffe and Dr. R. V. Welch, 27.vii.72. This is by far the rarest of the three species, having been recorded only from the New Forest and Fleet (S. and N. Hants.), Surrey (especially at Bookham Common), near Nethy Bridge, Inverness, and in County Kerry, Ireland. There is much confusion in the literature because the name *beccabungae* has been used for the common species now known as *G. veronicae* (Germ.). The beetle has been recorded from *Veronica scutellata* L. 2. Example of *G. veronicae* (Germ.) from St. Neots Holt, Huntingdonshire, and Thompson Common, Norfolk, 15.v. and 23.v.61 respectively.

In both places the weevils were taken on *Veronica beccabungae* L. The normal form of the weevil in Britain is all black (f. *nigrum* Walton) but the nominate form has red tibiae and red lateral patches on the elytra. Both examples exhibited are f. *nigrum*. *V. baccabuntae* is the usual foodplant.

3. Specimens of *G. villosulum* Gyll. from Hermingford Grey, Huntingdonshire, 14.vi.70, and Idmiston, Wiltshire, 26.v.71. In each case the weevils were found on *Veronica anagallis-aquatica* L. or *V. catenata* Pennell. Both *G. veronicae* and *G. villosulum* are easily reared from galled seed capsules of the host plants. They are widely distributed in England.

COMMUNICATIONS

Dr. P. A. Boswell said that he had seen two specimens of the Comma (*Polygona c-album* L.) (Lep., Nymphalidae) flying and sunning themselves in a garden at West Byfleet, Surrey, on 3.ii.1974.

Colour transparencies were shown by Messrs. J. Heath, E. S. Bradford, P. A. Boswell, C. O. Hammond, G. J. James and R. W. J. Uffen.

Commenting on Mr. Bradford's exhibit, Mr R. F. Bretherton said that he had bred *T. pelliionella* from a larva found by his wife in his trouser turn-up. Dr. Morris

said that *S. grossum* was common in some parts of Ireland and that he had seen it in enormous numbers at one locality in the west of that country.

28th FEBRUARY 1974

The President, Mr. C. MACKECHNIE JARVIS, in the chair.

The following new members were declared elected:

Dr. B. Redway, Messrs. B. J. McHugh, I. P. Kruys and N. R. Endacott.

EXHIBITS

Mr. A. E. GARDNER—A specimen of *Chrysochloa cacalinae* (Schrank) (Col., Chrysomelidae) taken 11.v.1904 at New Malden, Surrey, by Mr. W. S. Isaac. It was discovered in a series of *C. menthastri* (Suff.) given to the exhibitor by the late Mr. J. L. Henderson. Specimens from Wales and Scotland have been recorded by Mr. H. J. Cribb in 1936 (*Ent. mon. Mag.*, 99:136) but this third and belated record is the earliest known example of what can only be regarded as a casual introduction.

Col. A. M. EMMET—1. Two specimens of *Phyllonorycter muelleriella* Zell. (*amyotella* Duponchel) (Lep., Gracillariidae) bred from mines in withered oak leaves gathered from saplings at Arnside Knott, Westmorland, 26.xii.73. This species was taken in the Bristol area in the middle of the nineteenth century. It is stated by Meyrick to occur in Worcestershire but the authority for this record has not been traced. It was recorded widely in the past from Lancashire, Yorkshire, Westmorland, Cumberland and Durham, but always in small numbers. The most recent record to be traced is dated 1888. 2. A map showing the number of Nepticulidae to be recorded from each vice-county of the British Isles. Eleven of the members of the Society submitted records or collected mines for determination enabling some 600 new country records to be made in 1973. They will be shown on the distribution maps in the forthcoming *Butterflies and Moths of Great Britain and Ireland*.

Mr. E. S. BRADFORD—A specimen of *Cychnus caraboides* (L.) var. *rostratus* (L.) (Col., Carabidae) the only *Cychnus* species to be found in Britain. It was found in dead wood at East Blean, Kent, on 25.ii.74. Although it is said to feed on snails, none were found in the immediate area.

Dr. M. G. MORRIS—Three species of common, but striking, Heteroptera from the Spanish Pyrenees. 1. *Camptopus lateralis* (Germar) (Aldidae), from San Felices, nr. Jaca, 20.vi.72. It is widely distributed in the mediterranean region, northwards to southern France and Germany and eastwards to India and Afghanistan. It flies very readily and is said by Stichel to be associated with *Daucus carota* L. (Wild Carrot) and *Chrysanthemum leucanthemum* L. (Ox-eye Daisy). 2. *Gonocerus juniperi* ssp. *triquetricornis* (Rb.) (Coreidae) also from San Felices on the same date. This subspecies has a restricted range in Spain, southern France, Italy and north Africa, but the nominate form is more widely distributed in southern and eastern Europe, reaching the Netherlands. It feeds on species of *Juniperus* and is very similar in size, shape and coloration to our own *G. acutaequalatus* (Goeze) on *Buxus sempervivens* L. (Box). (3) *Phyllomorpha lacinata* ssp. *lacinata* (Vil.) (Coreidae) from San Juan de la Peña, nr. Jaca, 23.vi.72. A species with remarkable spines and outgrowths of the integument. It was taken on a very sunny, steep slope. It is widely distributed in southern Europe, associated with species of *Paronychia* (Caryophyllaceae) and *Panicum* (Gramineae).

COMMUNICATIONS

Dr. C. G. M. de Worms said that he thought the season was about three weeks advanced. He had already taken *Orthosia stabilis* D. & S. (Lep., Noctuidae) and *Achlya flavicornis* L. (Lep., Geometridae) at light but was still awaiting *Biston strataria* Hufn. (Lep., Geometridae). Mr. Bradford said that a specimen of *Orthosia gothica* L. (Lep., Noctuidae) had emerged three days earlier from a pupa taken at East Blean, Kent. Mr. G. Prior had seen a specimen of *Phlogophora meticulosa* L. (Lep., Noctuidae) at Harrow on 26.ii.74. Dr. P. A. Boswell reported seeing *Aglais urticae* L. (Lep., Nymphalidae) at Kingston, Surrey, on 23.ii.74 and at Old Working, Surrey, on 24.ii.74 when *Inachis io* L. (Lep., Nymphalidae) was also seen. Mr. S. A. Knill-Jones had seen *A. urticae* outside the Albert Hall and the President had seen it in Salisbury, both on 24.ii.74. Mr B. F. Skinner reported *Pieris rapae* L. (Lep., Pieridae), *A. urticae* and *Polygonia c-album* L. (Lep., Nymphalidae) from Torquay on 20.ii.74. Mr. D. P. L. Matthews had seen *A. urticae* on the Isle of Wight on 21.ii.74 and also reported that *Mimosa* and *Euphorbia* were in full bloom.

Mr R. S. Tubbs said he had a starling visiting his garden which had an enormously elongated upper bill. It had difficulty in feeding without turning its head sideways. Dr. B. J. MacNulty remembered having seen a sparrow with an upper bill four or five times its normal length. It was also underpigmented and thin. Mr. T. Wilkinson had once come across a blue tit with crossed bills, which, however, seemed healthy and of normal weight.

Commenting on Mr. Gardner's exhibit, the President said that this was regarded by German authorities as a mountain species. He added that he had taken the species exhibited by Mr. Bradford in northern Scotland.

Mr. M. C. Day gave a talk entitled 'An entomological expedition to the southern part of western Africa' which he illustrated with colour slides. Afterwards he answered questions about the exhibition.

14th MARCH 1974

The President, Mr. C. MacKECHNIE JARVIS, in the chair.

EXHIBITS

Dr. M. G. MORRIS—*Apion sicardi* Desbr. (Col., Apionidae), a species recently reassessed by Herr Lothar Dieckmann of Leipzig. A revision of the *A. loti* Kirby group of species indicates that we have two of the three species of the group in Britain (Beitr. Ent. 23:71–92).

A. sicardi is very similar to *A. loti*, shown for comparison, but may be distinguished, *inter alia*, by the shape of the elytra, which are expanded and broadest behind the middle on *sicardi*, whereas in *loti* they are broadest at the middle. Also *sicardi* has a feeble bluish metallic sheen which is absent in *loti*. Biologically the species are very distinct. The main foodplant of *loti* is *Lotus corniculatus* L., whereas, in northern Europe at least, *sicardi* feeds on *Lotus pedunculatus* Cav (= *uliginosus* Schkuhr.).

The exhibitor has had *sicardi* from Kent, the New Forest and Crose Mere, Shropshire. The pair shown were taken from this last locality on 20.vii.72. The pair of *loti* shown were taken at Gundale, Yorkshire, on 4.vii.65. The latter species occurs throughout the British Isles.

COMMUNICATIONS

Col. A. M. Emmet said that after saying at the last meeting that he had no

records of *Phyllonorycter muelleriella* Zell. since 1888, he had now traced two through Dr. Askew of Manchester University. These had been bred from material taken at a wood near Newby Bridge, Lancs., and from Delamere Forest, Cheshire. Both, he thought, were new county records.

Col. Emmet also reminded members that two years previously he had distributed some young larvae of *Endromis versicolora* L. (Kentish Glory) (Lep., Endromidae). Last year, from those he had kept, three females had emerged and this year two males. He wondered if any present had had females emerge this year. Mr. E. H. Wild said that he had two females emerge some time ago. Dr. B. J. MacNulty added that last year he had found that at a temperature above 54°F there were emergences but below 49°F there were none.

Mr. B. O. C. Gardiner had received some pupae for identification from Santiago, Chile. These were of *Pieris brassicae* L. (Lep., Pieridae), which was apparently devastating cruciferous crops there. He added that this was almost 100 years since *Pieris rapae* L. (Lep., Pieridae) arrived in the U.S.A.

Commenting on Dr. Morris's exhibit, the President suggested that a third of the specimens from France identified as *A. loti* were in fact *A. sicardi*. Dr. Morris said that this would not surprise him, but he thought that not so many would be found in Britain. He agreed with the President that females were more common than males.

Mr. B. O. C. Gardiner gave a talk entitled 'Commercial Entomology—is one man's rarity another's livelihood?'. This was followed by a lively and, at times, heated discussion.

28th MARCH 1974

The President, Mr. C. MacKECHNIE JARVIS, in the chair.

The following new members were declared elected:

Messrs. J. L. Cilia and D. C. Warner.

EXHIBITS

Mr. E. S. BRADFORD—An undescribed species of the Nepticulidae (Lepidoptera) taken in East Blean woods on 7.vii.73.

Col. A. M. EMMET—A species of *Nepticula acetosae* Staint. and *N. microtheriella* Staint (Lep., Nepticulidae). The former is stated in the *Guinness Book of Records* to be the smallest British moth, members, however, agreed overwhelmingly that this honour should go to the latter.

Rev. D. J. L. AGASSIZ—Cocoons found under apple bark at Enfield, Middlesex. He hoped that they were *Conopia myopaeformis* Bork. (Lep., Sesiidae), but thought they were too large and were probably *Eurrhyncha hortulata* L. (Lep., Pyralidae).

Mr. S. A. WILLIAMS—The following beetles taken from a nest of a tawny owl in the hollow limb of a fallen willow at Leckford, Northamptonshire, on 17.iii.73. *Atheta* (*Tetropla*) *harwoodi* Williams and *Philonthus subuliformis* (Grav.) (= *fuscus* (Grav.)) (Col. Staphylinidae) and *Gnathoncus schmidtii* Reitter (= *nidicola* Joy) (Col., Histeridae).

COMMUNICATIONS

Col. Emmet reported that a female Kentish Glory (*Endromis versicolora* L. that he had mentioned at a previous meeting had been put with a male and although not seen to pair, had laid about 75 eggs.

He also reported finding a larvae of the Clay Triple-lines *Cyclophora linearia* Hübn. (Lep., Geometridae) feeding on bilberry (*Vaccinium myrtillus* L.), an unusual foodplant.

Dr. C. G. M. de Worms reported that on 25.iii.74 he had taken the Common Quaker (*Orthosia stabilis* D. & S.) and the Dotted Chestnut (*Conistra rubiginea* D. & S.) (Lep., Noctuidae). He had seen the Brimstone (*Gonepteryx rhamni* L.) (Lep., Pieridae) at Woking on the same day. He also thought that the Brindled Beauty (*Lycia hirtaria* Clerck) (Lep., Geometridae) was early this year.

There followed a discussion on 'Insect Photography'. Messrs. M. W. F. Tweedie, P. A. Boswell and E. S. Bradford described the techniques that they used when using electronic flash and showed slides as illustrations. Mr. C. O. Hammond described the use of close-up lenses, while Mr. S. Beaufoy talked about how he had used indoor flood-lighting when photographing larvae for his book *Butterfly Lives*. Other members then took part in a discussion.

BOOK REVIEW

British Tortricoid Moths—Cochylidae and Tortricidae: Tortricinae by J. D. Bradley, W. G. Tremewan and Arthur Smith with additional colour illustrations by Brian Hargreaves. The Ray Society, £11.50.

Entomologists who study the Tortricoidea have hitherto had to rely on inadequate and out-of-date literature and consequently the work under review answers a very real need. The publication in 1952 of *British Pyralid and Plume Moths* by B. P. Beirne caused many collectors to broaden their interests to include these families and the *British Tortricoid Moths* will have a similar effect to the benefit of entomology in this country.

The Tortricoidea comprises two families, the Cochylidae and the Tortricidae, the latter being divided into two subfamilies, the Tortricinae and the Olethreutinae. The current work covers only the Cochylidae and Tortricinae, that is, about two-fifths of the total number of species. Work is already well advanced on a companion volume to cover the Olethreutinae.

The relatively brief introduction covers the whole of the Tortricoidea, indicating the characters governing classification, describing and figuring typical wing patterns and outlining the general features of the early stages. Next comes an account of the biology of the group, expressed in broad terms. There follow sections entitled 'Collecting and preparing specimens', 'Killing and setting the imago', 'Examination of wing venation', 'Dissection and preparation of genitalia', 'Preservation of larvae and pupae', 'Phylogeny', 'Nomenclature and synonymy'. Thus the introduction (and, indeed, the whole work) is aimed at every class of reader: the beginner is told how to kill and set his specimens, while the advanced student is introduced to problems posed by rival systems of classification.

A criticism that may be levelled is that the language is more technical than that to which the amateur is accustomed, and there is no glossary. The authors (wisely, in my opinion) felt that they should not write 'down' to their public. The amateur of today generally has a grounding in biology and the terminology used should not be unfamiliar to anyone who has read Biology to 'A' level standard.

Though there is a dichotomous key to the families, subfamilies and tribes, there are no keys to the genera and species. The authors state that 'extensive use of genitalia characters for classification has made it virtually impossible to construct reliable keys to the Tortricoidea on other external characters alone'. The collector will therefore have to depend on the text and illustrations to identify his material.

A check-list of names and synonyms given separately obviates the necessity of including full synonymy under the heading of each species. However, the names used by authors of the principal text-books (Barrett, Pierce and Metcalfe, Meyrick and Ford) are listed to facilitate cross-reference.

The adults are described in clear, precise terms with due regard to sexual dimorphism. Next we have a brief account of the main trend of variation. Then there comes a paragraph entitled 'Comments' in which advice is given on the separation of the species under consideration from its close relatives. In the absence of keys this paragraph will be of special value to the reader. There follows a section on biology. In a limited number of cases the structure of the ovum and circumstances of oviposition are described. Then there is a description of the larva, with its foodplants, season and method of feeding. Advice is given, where appropriate, on how to find and rear the larva. The pupa and pupal

situation are described. The section concludes with an account of the imago, telling us the time of year in which it occurs, the time of day at which it flies, its principal habitats and behaviour: here too is advice given on how best to obtain it. The description of each species ends with a statement of its distribution in the British Isles, in some detail in the case of the rarer species, together with an outline of its overseas distribution. All this information is conveyed so succinctly that the whole coverage of a species seldom exceeds a page and a quarter in length.

Except in the case of two species, *Acleris tripunctana* Haw. and *A. ferrugana* D. & S., which have been much confused in earlier works, there are no diagrams of the genitalia. Reference, however, is given to the figures in Pierce and Metcalfe. These authors sometimes used incorrectly determined material causing their figures to be wrongly named. The work under review makes it clear on which plate and under what name the correct figures are to be found. Where a species was not depicted by Pierce and Metcalfe, a reference is given to the publication where figures of the genitalia are printed.

The illustrations are magnificent. In the middle of the book between the descriptions of the Cochylidae and the Tortricinae, there are 21 black and white plates showing the larval feeding of 60 selected species. Macrolepidopterists may be surprised that the larvae themselves are not depicted. The larvae of the microlepidoptera generally feed in a spinning or inside a root, a stem, a flower or a fruit and are concealed from the eye. It is therefore much more useful to show the external evidence for their presence on the plant, as it is for this that the lepidopterist will search.

At the end of the book there are 26 colour plates of the moths themselves, shown at approximately $\times 2.4$ natural size. From one to 20 specimens are depicted for each species, depending on the degree of variation. The black and white plates, the colour plates of the Cochylidae and Plate 47 depicting the forms of *Acleris literana* L. are the work of Arthur Smith, the remainder are by Brian Hargreaves. They are two of our foremost entomological artists and this work enhances their already high reputation.

The book concludes with a list of larval foodplants and their associated species, a bibliography of over 300 references and an index.

The authors tell us that the work was over ten years in preparation, and everywhere there is evidence of integrity of scholarship and exhaustive research. There is little current information on any of the species which they have omitted. They will be rewarded if this great book stimulates the study of the Tortricoidea and prompts the publication of notes and papers to fill the gaps in our knowledge of the biology and distribution of the species. This is where members of a society such as ours can play their part. It is to be hoped that the response to this volume will be sufficiently favourable to encourage the authors to press on with the complementary volume on the Olethreutinae.

Finally, the Ray Society is to be thanked for sponsoring the work and the Curwen Press congratulated on its professional expertise in producing a textbook of such high artistic merit.

A.M.E.

FIELD MEETING

BOTANY BAY WOOD, DUNSFOLD, SURREY—4th November 1973

Leader: Col. A. M. EMMET

Seven members attended the meeting which was devoted to the search for leaf-mining microlepidoptera. Two species which had been taken freely at a November meeting in 1970 on the same ground were not found. These were *Coleophora wockeella* Zell. and *Tischeria dodonaea* Heyd., though traces of larval feeding of the former were seen on a single plant of betony (*Betonica officinalis* L.). Perhaps this is a species which likes to shift its ground, for there were few signs of it in 1970 at the place where it had been taken the previous year, though it was common not far away. Alternatively the development of undergrowth which had smothered much of the betony may have rendered the habitat unsuitable to *wockeella*. In the case of *dodonaea*, parasitisation had been excessive in 1970, and this may have virtually wiped out the colony.

Other leaf-miners, however, were plentiful. Oaks yielded members of the *ruficapitella* group of Nepticulidae, *Ectoedemia subbimaculella* Haw. and *E. quercifoliae* Toll., the last being new to Surrey. The commonest birch-feeding species was *Stigmella betulicola* Staint., while willows provided *Nepticula salicis* Staint., in quantity and *Ectoedemia intimella* Zell. more sparingly. Mines of *Stigmella anomalella* Goeze and *Ectoedemia angulifasciella* Staint. were common on rose and vacated mines of *Nepticula aeneofasciella* H.-S. were seen on a species of *Potentilla*, which is a less common alternative foodplant. Empty mines of *Nepticula dulcella* Hein. on *Fragaria* provided a second new county record. Unidentified *Phyllonorycter* mines were collected in leaves of oak and willow.

After lunch rain began to fall and soon became so heavy that it was decided to abandon the meeting.

THE MATING OF BOMBUS LAPIDARIUS L.

On July 19th 1973 I heard a loud sustained buzzing outside my back door, comparable to that of a queen hornet taking off. I hastily went to investigate and saw a mating pair of the bumble bee (*Bombus lapidarius* L.) (Hym., Apoidea) still hovering and looking for somewhere to settle. To my delight the queen selected the top of a door panel (just the right height for the camera) alighting at 4.15 p.m. with the male dangling upside down with all six legs idle. At 4.20 p.m. the male brushed the lower segments of the queen's abdomen with all six legs, opening them wide apart and then bringing them forward quickly to perform the stroke. This operation was continued for just over five minutes, the male having to arch his body to accomplish each effort of stroking. The curved sting of the queen was out all the time and the pair were quite indifferent to the flash of the camera. From 4.20 until 4.55 the male hung quite motionless with legs outspread. The queen's abdomen retracted and expanded as in normal breathing but was interrupted some ten times by an upward heave of the dangling male. At 4.55 the queen decided to crawl about three inches up the door but the mating process continued until 6.15 when the queen used her hind legs to try to push the male away, as the male, hanging helplessly suspended, was apparently not able to disengage itself. At 6.22 the queen expanded her wings to fly and both fell to the ground which was sufficient for the male to detach itself. The queen quickly

flew off and the male, lively again after some 3 minutes, followed. Strangely enough the following day at Trent Park, Cockfosters, I found another pair of the same species mating on a sycamore leaf, but this male had no difficulty in making a separation, taking off and leaving the queen behind.

C. O. Hammond

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MEETINGS OF THE SOCIETY

are held regularly at the Society's Rooms, but the well-known ANNUAL EXHIBITION takes place in the autumn in external accommodation. Frequent Field Meetings are held at weekends in the Summer. Visitors are welcome at all meetings. The current Programme Card can be had on application to the Secretary.

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JANUARY 1975

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THE BUTTERFLIES OF IRELAND

By ROBERT NASH

(Ulster Museum, Botanic Gardens, Belfast)

The butterfly fauna of Ireland has been studied rather more intensively than many authors have suggested or implied. Unfortunately the published results of these studies are scattered widely through the literature and few discursive accounts have been written. This short paper attempts to remedy that situation. It is hoped that it will stimulate butterfly students to look at some of the intriguing problems which remain.

CHECKLIST OF THE BUTTERFLIES OF IRELAND

PART 1—RESIDENT SPECIES

Dingy Skipper *Erynnis tages* L.
 Wood White *Leptidea sinapis* L.
 Brimstone *Gonepteryx rhamni* L.
 Large White *Pieris brassicae* L.
 Small White *Pieris rapae* L.
 Green-veined White *Pieris napi* L.
 Orange-tip *Anthocharis cardamines* L.
 Green Hairstreak *Callophrys rubi* L.
 Brown Hairstreak *Thecla betulae* L.
 Purple Hairstreak *Quercusia quercus* L.
 Small Copper *Lycaena phlaeas* L.
 Small Blue *Cupido minimus* Fuessl.
 Common Blue *Polyommatus icarus* Rott.
 Holly Blue *Celastrina argiolus* L.
 Small Tortoiseshell *Aglais urticae* L.
 Peacock *Inachis io* L.
 Pearl-bordered Fritillary *Boloria euphrosyne* L.
 Dark Green Fritillary *Argynnis aglaja* L.
 Silver-washed Fritillary *Argynnis paphia* L.
 Marsh Fritillary *Euphydryas aurinia* Rott.
 Speckled Wood *Pararge aegeria* L.
 Wall *Lasiommata megera* L.
 Small Mountain Ringlet *Erebia epiphron* Knoch (possibly extinct)
 Grayling *Hipparchia semele* L.
 Gatekeeper *Pyronia tithonus* L.
 Meadow Brown *Maniola jurtina* L.
 Small Heath *Coenonympha pamphilus* L.
 Large Heath *Coenonympha tullia* Mull.
 Ringlet *Aphantopus hyperantus* L.

PART 2—MIGRANT SPECIES

Pale Clouded Yellow *Colias hyale* L. (very infrequent)
 Clouded Yellow *Colias croceus* Geoff.
 Bath White *Pontia daplidice* L. (very infrequent)

Red Admiral *Vanessa atalanta* L.

Painted Lady *Cynthia cardui* L.

American Painted Lady *Cynthia virginienensis* Drury (very infrequent)

Camberwell Beauty *Nymphalis antiopa* L.

Queen of Spain Fritillary *Argynnis lathonia* L. (very infrequent)

Monarch *Danaus plexippus* L. (very infrequent)

It is immediately obvious from the checklist of Irish resident species that many British residents are absent from Ireland. Why is this? There are, unfortunately, no straightforward and simple answers to this question. It is, however, easy to recognise trends among the absentees. They fall into four fairly well-defined groups.

Group 1. Species found only in the southern half of Britain. They are: Small Skipper; Large Skipper, Grizzled Skipper; White-letter Hairstreak; Silver-studded Blue; Brown Argus; Duke of Burgundy Fritillary; White Admiral; Large Tortoiseshell; Comma; High Brown Fritillary; Marbled White.

Group 2. Species whose centres of distribution are in southern England and which are more or less confined to that region. They are: Essex Skipper; Silver-spotted Skipper; Chalk-hill Blue; Adonis Blue; Purple Emperor.

Group 3. Species found only in the northern half of Britain. They are: Northern Brown Argus; Scotch Argus.

Group 4. Species which are very local in Britain. These are: Chequered Skipper; Lulworth Skipper; Swallowtail; Black Hairstreak; Large Blue; Glanville Fritillary; Heath Fritillary.*

It should be noted that although many non-Irish species fall into group 1 many species with a southerly distribution in Britain do occur in Ireland. These are: Wood White; Brimstone; Brown Hairstreak; Holly Blue; Silver-washed Fritillary; Wall; Gatekeeper. The Large Heath a predominantly northern species in Britain is widely distributed though local in Ireland. It is also interesting that approximately two-thirds of the resident Irish species have ranges which cover the whole country whereas the corresponding figure for Britain is approximately one-sixth.

Ford (1957), Beirne (1943) and others have suggested that the impoverished nature of the Irish butterfly fauna is in part due to the early separation of Ireland from Britain towards the close of the Pleistocene Period. During the Pleistocene complex changes in the geography of the British Isles occurred together with, and as a consequence of, great climatic changes. The arguments are very convincing but are difficult to summarise. Chapter 14 in Ford's classic *Butterflies* entitled 'The Origin of the British Butterfly Fauna' is perhaps the neatest presentation of the hypotheses of this school. In reading this the following points should be borne in mind. First present-day distributions do not necessarily reflect exactly those of the even fairly immediate past. In the last decade the Wood White, almost certainly absent from the north-east of Ireland during the previous hundred years or so, has not only colonised that area but its spread has been meteoric. In contrast the Small Blue once common on the cliffs near Larne, Co. Antrim is now almost certainly extinct in the north-east in spite of numerous recent statements to the contrary. There is absolutely no reason to suppose that similar extensions and contractions of range have not taken place in the past. Indeed it would be surprising if they had not. Second, in the absence of a fossil record it is impossible to be certain that species absent from Ireland at the present day were not present here in the not too distant past. The Heath Fritillary was apparently abundant in

* once present in Ireland but now extinct—see text.

Killarney about 1866 but now seems to be extinct here. Note that Ford's statement, that the Silver-washed Fritillary is absent from the north-east of Ireland was in error. Last, it should be remembered that there is still very considerable disagreement amongst Pleistocene specialists about the details of events (geographical, climatic etc.) during this perplexing period.

Other workers have suggested that many of the species absent from Ireland are, and have been, prevented from colonising Ireland for 'ecological' reasons. This would apply particularly to those confined in England to the south-east corner and to isolated spots on the south coast and also to some of those ranging more widely over southern Britain only. Oldroyd (1958) has drawn attention to the contrast between highland and lowland Britain—'in spite of the fact that we have no real mountains, the hills of west and north form a physical and ecological system which contrasts sharply with the mixed landscape of midland, southern and eastern England'. Ireland of course is 'highland' in character. The differences between the two regions are apparent in rainfall (especially in the number of rain days), cloudiness (compare monthly totals for sunshine) and windiness. Ireland too is less geomorphologically diverse than Britain and there is here an extensive coverage of bed-rock by uniform glacial deposits and bog. These differences might begin to strike the reader as significant when it is realised that there is no Irish equivalent of the South Downs. Ireland is now a notably tree-less country but the country was, in historic times, clothed in extensive mixed woodland. However, economic developments in the last two centuries led to the felling of timber on a massive scale. Thus there are good grounds for believing that many Irish absentees failed to establish themselves for 'ecological' reasons and that some woodland species may have become extinct here as a result of massive habitat destruction.

Ireland has been separated from Britain for some eight to ten thousand years. This has been a sufficiently long period of isolation for the development of some distinct Irish races or subspecies. It is almost certainly true that all the resident species on the Irish list have diverged genetically from their British counterparts. However, only a few are recognised as distinct subspecies. These are listed below. Further work might well add to them (or, possibly, subtract from them).

BUTTERFLIES WITH DISTINCT IRISH SUBSPECIES

Dingy Skipper	subspecies <i>baynesi</i> Huggins
Wood White	subspecies <i>juvernica</i> Williams
Brimstone	subspecies <i>gravesi</i> Huggins
Green-veined White	subspecies <i>britannica</i> Verity*
Orange-tip	subspecies <i>hibernica</i> Williams
Small Copper	subspecies <i>hibernica</i> Goodson
Common Blue	subspecies <i>mariscolore</i> Kane (= <i>clara</i> Tutt)
Marsh Fritillary	subspecies <i>hibernica</i> Birchall (= <i>praeclara</i> Kane)
Small Mountain Ringlet	subspecies <i>aetherius</i> Esper†
Grayling	subspecies <i>clarensis</i> de Lattin—Cos. Clare and Galway
	subspecies <i>hibernica</i> Howarth—remainder of Ireland
Meadow Brown	subspecies <i>iernes</i> Graves
Large Heath	complex situation—may be part of a cline.

**britannica* is a rather unfortunate name for an Irish subspecies. Specimens from the rest of the British Isles are referable to ssp. *sabellicae* Stephens.

†Mr. T. G. Howarth (pers. comm.) says of *E. epiphron*: 'As far as I know there

are only three specimens of Irish *Erebia epiphron* in existence (Dublin Museum) so that it is extremely difficult to come to any firm conclusions regarding the status of these. B. C. S. Warren in his Monograph of the Genus *Erebia* 1936: 110 deals with the Irish specimens under ssp. *aetherius* f. *nelamus* (Boisduval). He (Warren) states: 'I know these specimens only from photographs of two of them, one of which is shown by figs. 772 and 779. Both photographs were good, and there was no room to doubt that the Irish specimens were *nelamus*. There was obviously no connection with English *mnemon*. A good series of Irish specimens would be of great interest, if they could be obtained, for from the isolated position of their habitat it would not be surprising if they proved to be a more distinct race than the few specimens suggest. Ireland is, of course, the most westerly station of the species.'

It is of considerable significance that some Irish subspecies have only been recognised in recent years and so far as I am aware all described subspecies were recognised on colour and pattern variation in the adult insects. Now it is fairly obvious that these colour and pattern variations are merely the outward manifestations of genetic difference. There should be other less obvious but probably more significant differences. Subtle differences in physiology (in the very broadest sense) and in other 'biological' aspects of butterfly life are to be expected. Such meagre information as we have suggests some very fruitful lines of research particularly for butterfly breeders. It is known for example that Irish Common Blues are more prone to gynandromorphism than their British cousins. F₁ hybrids between French and Irish Green-veined Whites are of somewhat spectacular appearance. Certain varieties and aberrations seem to occur more frequently in Irish than in English stock and this situation has apparently not been quantified for any species. Extensive crossing of British and Irish butterflies is almost certain to show distinct differences in their genetics.

In a short resumé such as this a great amount of published information has necessarily been ignored. Much additional information is to be found in standard works on the butterflies of the British Isles which will be familiar to most readers. A short bibliography of the classic Irish literature together with some important papers and references to citations in text are given below.

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ARE THERE TWO SPECIES WITHIN THE EUROPEAN RACES OF *PARNASSIUS APOLLO* L.?

While on a trip in Spain with W. L. Coleridge and A. Waters, I was able to collect ova from the Apollo (*Parnassius apollo* L.: Lep., Papilionidae) both in the limestone mountains near Burgos and in the Montes Universales near Bronchales. The larvae from these eggs were overwintered in glass tubes and hatched early in the spring. The coloured spots along the sides were an orange red, fairly large and well defined and stayed this colour throughout. I was again able to collect ova from females in the Zabliak region of Montenegro when there with R. F. Bretherton and the larvae from these were in appearance the same as those from Spain. During the same period Alan Waters had been collecting ova from females from the Alpine area around Brig in Switzerland. These larvae had the same ground colour, black, as the Spanish and Yugoslavian races but the spotting on the sides was quite different. It was a bright yellow and the spots were smaller and less well defined. Again this coloration was maintained throughout the larval life. Further collections of ova in the Swiss mountains produced larvae of the same coloration. It does not appear from these limited experiments that the two colour forms occur within the same race, as often happens in larval dimorphism. I had hoped to try to cross the imagines from the Yugoslav and Swiss races but the time schedule of the former (and that of the Spanish races) was about one month earlier than the Swiss so that the imagines of the Yugoslav race were dead by the time the Swiss ones had emerged. Distinct larval differences have been a clue in the past to different species viz. the Pale Clouded Yellow (*Colias hyale* L.) and *Colias australis* Berg. where the imagines are so very much alike but the larvae are quite different. Is it possible that there are in fact two species within *P. apollo*? It would be interesting to hear from any other person who has bred this species as to the colour form and locality, particularly if from northern Europe. I do not put very much weight on the difference in emergence dates as in the wild the emergence period is very lengthy and my misfortune may have been just bad luck and not indicative of a different emergence period in the wild.

1.ix.1974.

P. W. CRIBB

THE 1974 PRESIDENTIAL ADDRESS NOTES ON THE COLEOPHORIDAE

By J. M. CHALMERS-HUNT

I have chosen to discuss the Coleophoridae because I regard them as one of the most fascinating groups among the microlepidoptera. Yet, despite their interesting nature, people have tended to neglect these case-bearers owing to the belief that they are hard to breed and difficult to identify. True, caught specimens of many Coleophoridae can only be determined by their genitalia, but if one breeds them—and breeding Coleophoridae is not difficult, as I intend to show later—more than 75% of our British species are easily recognisable without recourse to genitalia examination, for the characteristically shaped larval cases usually provide the easiest and most ready means of identification.

But first of all let me say a few words about the imago. The perfect insects though varying greatly in size, colour and markings according to species, all exhibit a marked similarity of structure. The wings are smooth and narrow, elongated and pointed and have long cilia. The antennae are remarkable in that they are always porrected in repose. Haworth in fact called the genus *Porrectaria* on account of this characteristic. In most species the imagines are very retiring in the natural state, and it is not until the late afternoon that you may readily disturb them. At dusk, however, they fly naturally and later come, sometimes in numbers, to light.

Let us now turn to the larval cases. The Coleophoridae are particularly interesting because of the portable habitations of the larvae, the construction of which are among the most extraordinary products of insect workmanship. Broadly speaking there are six different kinds of case among the Coleophoridae, based on shape and the materials used in their construction.

1. The tubular case: pipe or roller-shaped. Usually made of parchment-like material, sometimes covered with grains of detritus.

2. The pistol-case: pistol-shaped, made of silk, blackened by a glandular secretion of cement and having a markedly wrinkled appearance.

3. The lobe case: covered with pieces of leaves which stick out on all sides. Larger in front and sometimes coil-shaped at the back.

4. The seed case: irregular in shape. Made of a hollowed seed capsule of the foodplant.

5. The sheath case: straight or slightly curved with the sides flattened and a distinct abdominal edge.

6. The leaf case: made of leaves closely woven together.

As we have seen, all coleophorid larvae are case-bearers, feeding on the leaves and seeds of plants. There are, however, certain signs to look for when searching for the larvae. The leaf feeders are easily detected, for, attaching the case to the underside of the leaf, they penetrate the cuticle and devour the parenchyma, thus mining the leaf which becomes discoloured. Moreover, a coleophorid mine is always recognisable, even if the larva has left it, by the round hole where the case has been attached. The seed feeding species on the other hand are less easily detected as there is no discolouration to indicate their presence, and it often requires experience and a keen eye to distinguish the case projecting from a seed-head.

Now to talk about breeding Coleophoridae. Most of our British species reach

the perfect state in June or July. All pass the winter as larvae, most of them in their cases. Though some species hibernate when quite small, the majority of larvae do so when full-grown including many that do not feed again after hibernation. The difficulty many people have, it seems, is to get the larvae safely through the winter. Perhaps I have been just lucky or possibly the system I use is a particularly good one, but I have never yet failed to rear a species of which I have had a number of cases, though the mortality due to parasitism has sometimes been very high. Indeed, within the past fifteen years, I have taken or bred 90 different species of Coleophoridae out of the total of 103 on the British list and, of this number, 78 species were bred.

My method has been quite simple. I put out the cases of many species—including most of the seed feeders—in cloth bags tied with string and hang these up on a wooden fence in my garden, facing south-west, a tip I was given by my old friend and teacher, Mr. Stan Wakely. In dealing with other species of Coleophoridae, especially leaf miners, I sleeve the foodplant with a nylon stocking from which the toe has been removed, and tie the two open ends with string to enclose the foliage and larvae. Depending on the nature and size of the foodplant, the stocking is tied either to the end of a branch or over a small bush or a pot containing the foodplant. After hibernation, and a few weeks before emergence time (owing to the need for precise information on this point and the fact that it is seldom available in the literature, I have cited hereunder exact dates of emergence or appearance in nature of many of the species treated), take the cases indoors and put them in circular plastic boxes covered with nylon stocking secured with elastic bands. Then place these in the morning sun, having first lightly sprayed them with water from a scent spray, and you should be rewarded with many Coleophoridae.

Always preserve the empty cases with the moths in your collection, though it is a wise precaution to keep a case some time before putting it in the cabinet if you suspect the moth has not emerged. I have heard stories of delayed emergence and moths seen flying about in the drawers. Incidentally, this winter I have outside only three bags and one nylon stocking, but some years have had nearly a score hanging up. It is essential to keep a written record of these. Don't fail therefore carefully to note down the position of every bag or stocking, together with full particulars of the contents of each.

The following records are nearly all based on my own personal experience. They are mainly unpublished and, as many are for Kent, only extra-Kentish localities have the name of the county added. Unless stated to the contrary, all records refer to imagines. The nomenclature and classification is that of *Kloet and Hincks, Check List of British Insects: Lepidoptera* (1972).

GENUS *AUGASMA* HERRICH-SCHAFER

Augasma aeratella (Zell.). Neither my friends the late Mr. L. T. Ford nor Mr. S. Wakely, in all their experience, ever took this species and the former told me that he was ever on the look out for it. The only recent occurrence to my knowledge is of a moth which the late Dr. D. A. B. Macnicol swept at Wimborne, Dorset, c. 1955 (teste S. C. S. Brown). I possess six old specimens, two of which were B. A. Bower's, bred Shoreham, Sussex, vii.1894, three of A. C. Vine's Brighton, Sussex insects, and one from Narborough, Norfolk. I have also two of the curious blackish pod-like galls made by the larva from the flower of *Polygonum aviculare* (L.) agg.

GENUS *METRIOTES* HERRICH-SCHAFER

Metriotes lutarea (Haw.). Long known as *M. modestella* (Dup.), I have taken the moth, usually at rest on, or imbibing from the flowers of, *Stellaria holostea* L., at East Blean, 28.v.1971 (4), 28.v.1973 (1, worn); Ffrwdgrech, Breconshire, 27.v.1968 (1). There is something mysterious about the larva. Meyrick (1927) and others say it occurs in June and July in seed capsules of *S. holostea*, later in a portable case made of a capsule, and he describes the larva as being 'yellow-whitish; head and plate of 2 marked dark brown'. I know of no illustration of the case, I am unaware of an account of its being found and know of no-one who has ever seen it. On 10.vii.1971 and 15.vi.1972 I collected into a cloth bag an abundance of seed capsules of *S. holostea* where I took the moths at East Blean, hoping to get the cases but there was none on subsequent examination of the contents. R. W. J. Uffen (R.W.J.U.), likewise failed to locate the larva and Dr. I. A. Watkinson has vainly attempted to get females to oviposit. One wonders therefore if, after all, *S. holostea* is the foodplant.

GENUS *GONIODOMA* ZELLER

Goniodoma limoniella (Stainton). I have found the cases without much difficulty on *Limonium vulgare* Miller on the Kent and Essex salt marshes. Benfleet, Essex, 15.ix.1957, moths reared vii.1958; Stoke Saltings, larvae feeding on the flowers, 3.ix.1970; Graveney, many cases on the stems of the foodplant, 23.x.1970, one stem bore five cases, moths reared 15–25.vii.1971 also several hymenopterous parasites. Note: the full-grown larva leaves the flowers upon which it has been feeding and bores into the stem to pupate, leaving the case sticking out from it.

GENUS *COLEOPHORA* HÜBNER

Coleophora leucapennella (Hübner). I disturbed many moths from a marshy spot among *Lychnis flos-cuculi* L. in Gloucestershire on 2.vi.1970, but owing to the species' extreme localisation purposely retained only a few specimens. On 22.vii.1973, I found, at the same spot, a number of cases, but few were still tenanted and of those that were the larvae were parasitised by at least two hymenopterous species. The larva forms its case from the seed capsule of *L. flos-cuculi*, feeding on the seeds, and, when full-grown, occupies the whole of the interior of the capsule. The larva affixes its case in various positions as shown in Plate V, Figs. 1a & b. This species is unique among the British Lepidoptera in that it is viviparous, there is no egg stage and the female actually lays a larva.

Coleophora lutipennella (Zell.). I have not yet been able to distinguish this in any stage from *C. flavipennella* (Dup.), except that the two are clearly distinguishable genitally. According to Toll (1962) however, there are slight differences externally in the perfect insects as well as in the cases. I took an imago at West Wickham, 31.vii.1963 (gen.det. R.W.J.U.).

Coleophora gryphipennella (Hübner). A commonly seen species as a larva, though I have only once taken the moth, Addington, Surrey, 22.vi.1970. The cases are readily detected in the autumn on wild rose owing to the conspicuous mines, but less easily in the spring after hibernation. Besides Surrey, I have also found them in Essex and in many places in Kent, e.g. High Halstow, 24.x.1969, bred 11.vi.1970; Darenth Wood, 17.v.1964, bred 3.vi.1964. The imagines are sexually dimorphic, the male being greyish and the female greyish-ochreous.

C. flavipennella (Dup.). I have taken the moth in Bucks. and Surrey; also in various parts of Kent, sometimes in numbers, e.g. I beat out moths plentifully

from low cover at Ellenden Wood, Whitstable, 12.vii.1968. I have taken what I believe to be the cases of this species on oak in various parts of Kent but as yet never bred the moths, only a brilliant metallic green chalcid, e.g. West Blean, about 15 cases on oak, 29.v.1971, from which many chalcids emerged.

C. serratella (L.). Formerly known as *C. fuscadinella* Zell. This and the next two are very similar in general appearance and perhaps indistinguishable though recognisably distinct genitally. Seal Chart, case on birch 25.v.1965, bred 28.vi.1965; West Wickham, case on elm, vi.1970 bred, 31.vii.1970; Dartford Heath, case on hawthorn, 1.vii.1970, bred 15.vii.1970; Dersingham, Norfolk, cases on *Myrica gale* L., 30.v.1967, bred 1.vii.1967; Alverstoke, Isle of Wight, case on alder, 21.v.1969, bred vi.1969.

C. coracipennella (Hüb.). Stephens (1828–34) records it from 'Darenth Wood' and 'near Dover', in June, adding that it was 'apparently not uncommon'. There seem to be no recent records and I have been unable to establish when or where it was last seen in Britain.

C. cerasivorella Packard. I have only two specimens, both from Addington, Surrey, bred from two cases I found on 20.vi.1969: one on hawthorn, bred vii.1969; the other on pear, bred 7.vii.1969.

C. milvipennis Zell. Dartford Heath, cases on birch, 6.x.1967, bred 9.vi.1968, also two hymenopterous parasites *Nythopia* s.l. sp. male (det. J. F. Perkins), and *Bracon* sp. male (det. G. E. J. Nixon). Durfold, Surrey, case on birch, 2.xi.1969, not reared.

C. badiipennella (Dup.). In my experience the best time to collect the full-grown larvae is during the last fortnight in September. Elmers End, cases on elm, 17.ix–12.x.1971, moths emerged 19–23.vi.1972.

C. alnifoliae Barasch. There appears to be still doubt as to whether this is distinct from *C. milvipennis* Zell. (Ellerton, 1970.) Eridge Park, Sussex, four cases on alder, two on birch, 15.vi.1971, from one of those on birch a female bred 20.vii.1971; three cases on birch seedlings, vi.1972, the larvae of two of which were still feeding, male bred 31.v.1973.

C. limosipennella (Dup.). Ellenden Wood near Whitstable, fully-grown cases in hundreds on elm, 10.vii.1971. I took about 40 from which I reared 15 moths but no parasites, 4–19.vii.1972.

C. siccifolia Stainton. Unlike most coleophorid cases which are very neatly constructed, that of *siccifolia* is strangely untidy, so much so that the late L. T. Ford called this the 'Untidy Tailor'. The mines are characterised by the fact that the larva makes a circular hole right through the leaf. I have found evidence of *siccifolia* in various parts of Kent and elsewhere, usually sparingly and mostly on hawthorn but occasionally on birch and apple. Dartford Heath, cases on hawthorn, 25.vi.–1.vii.1970, moths bred 6.vi.1971. The larva usually mines the underside of a leaf, but two small cases at Farningham on apple, 8.vi.1969, were on the upperside.

C. trigeminella Fuchs. I am not aware this species has been taken in Britain since A. Sich bred it in 1906 from cases he took at Putney, London and Brentford, Middlesex.

C. fuscocuprella H.-S. Farningham Wood, cases on birch, 14.x.1969, bred 6.v.1970. Durfold Wood, Surrey, cases on hazel and birch, 2.xi.1969.

C. viminetella Zell. I have found the cases in many localities in England, also in Wales, Scotland and Eire, mostly on *Myrica gale*, less often on various *Salix* spp. The times of appearance vary considerably, e.g. Godshill, Isle of Wight, case on *M. gale*, 25.v.1969, bred 25.vi.1969; case on *Salix* 10.vi.1972, bred 28.vii.1972. In my experience the species suffers heavily from parasitism.

C. idaeella Hofmann. Aviemore, Inverness-shire, 8 cases on *Vaccinium vitis-idaea* L., 17.iv.1970, five moths bred 10–14.vi.1970.

C. vitisella Hofmann. Aviemore, Inverness-shire, 18 cases on *Vaccinium vitis-idaea*, 17.iv.1970 (only three of which were fully-grown, the others being first-year cases), three moths bred 23–31.v.1970.

C. glitzilla Hofmann. Aviemore, Inverness-shire, 20 cases on *Vaccinium vitis-idaea*, 17.iv.1970, 12 moths bred 3–9.vi.1970. The larva cuts its case and in doing so forms a conspicuous elliptically shaped excision in the edge of the leaf.

C. arctostaphyli Hofmann. Mr. E. C. Pelham-Clinton kindly showed me where and how to find the cases of this very local species. Aviemore, Inverness-shire, fully-formed cases on *Arctostaphylos uva-ursi* (L.) Sprengel, 18.iv.1970, three moths bred 11–14.vi.1970. Later, I noticed amongst some of the foodplant I had collected that one of the leaves was mined and, in due course, that the occupant was a first-year *arctostaphyli* larva. This larva formed a case and in late June 1970 went into aestivation on a piece of stick until early August, when it recommenced feeding before entering hibernation that autumn, but came to grief sometime during the winter from the attentions of a predator, probably a spider.

C. hornigi Toll. Known for many years as *C. paripennella* P.&M., et auct. I have usually found the cases as odd ones or in very small numbers, except at Benfleet, Essex, 22.ix.1969, where they were plentiful on sloe but less so on rose, elm and bramble, moths bred 5–9.vi.1970. I have also noted the larva in Kent on wild plum, hazel, apple, birch, cherry and hawthorn. Eridge Park, Sussex, two cases on alder, 15.vi.1971, a moth bred 18.vi.1972.

C. juncicolella Stainton. Elveden, Suffolk, swept a dozen cases from *Calluna vulgaris* (L.) Hull, 16.iv.1967. Oxshott, Surrey, two cases, 7.iv.1969. Granish Moor, Inverness-shire, a single case on a wooden post, 18.iv.1970, moth emerged vi.1970. Hothfield, beat *C. vulgaris* into a bag 4.iv.1972 from which I later collected 34 larvae crawling up the side, the last on 16.iv.1972, seven moths bred 11–13.vii.1972 and two hymenopterous parasites 16.vii.1972.

C. orbitella Zell. A scarce and very local species in my experience, affecting birches on heaths. Dartford Heath, old case on birch, 10.x.1969. West Wickham, six cases on birch, 25–30.x.1969, all larvae but one still feeding when taken, four moths bred 6–9.vi.1970; five larvae feeding on birch, 18.x.1971, four moths bred 11–13.vi.1972.

C. binderella (Kollar). Dartford Heath, a case on birch attached to the base of a fork, 14.x.1969. Shanklin, Isle of Wight, two cases on alder, both quite high up, 27.v.1969, moth bred 9.vii.1969.

C. potentillae Elisha. Wicken Fen, Cambs., cases on *Filipendula ulmaria* (L.) Max. and *Rubus*, 21.ix.1969, bred 4–8.vi.1970. Riddlesdown, Surrey, cases abundant very locally on *Poterium sanguisorba* L. and less numerous on *Filipendula vulgaris* Moench, ix.1962, at least a dozen moths bred vi.1963, two of which paired and later I noticed the young larval progeny walking about with their freshly made tiny cases. Dartford Heath, cases on *Potentilla erecta* (L.) Rauschel, 6.x.1967.

C. ahenella Heinemann. Cholderton, Wiltshire, 16.ix.1973, R. W. J. Uffen and I collected 20 cases in an area where Col. A. M. Emmet had discovered the species a few days previously. We found no trace of it on *Thelycrania sanguinea* (L.) Fourr. or *Viburnum lantana* L., both of which are reputed foodplants (Ford, 1949), all were on *Rhamnus catharticus* L. The majority occurred low down and although most were fully formed cases, two were minute. All except two or three larvae appeared to be still feeding, but we found two which were already affixed to the stem of *Rhamnus*, close to the surface of the ground and partly covered by dead

leaves. Some that I took continued to feed for about a month before finally fixing. Ford says the case is on the upper side of leaves, but all mine were mining from the underside.

C. albitarsella Zell. A rather uncommon species in Kent in my experience, but I once found cases plentifully in a very small area at Portland, Dorset, on *Origanum vulgare* L., 12.v.1968. Great Orme, Caerns., case fixed to a grass stem, 6.vi.1968. Halling, case on *O. vulgare*, 12.v.1957 moth bred 7.vii.1957. Wilmington, cases on *Glechoma hederacea* L., 30.iv.1965, moths bred 28.vi–2.vii.1965. High Halstow, 20.x.1968, one large and one small case on *G. hederacea*. St. Margaret's Bay, 10.vi.1969, a case on *Mentha rotundifolia* (L.) Hudson, bred early viii.1969.

C. trifolii (Curtis) = *frischella* sens auct. Folkestone Warren, 2 males, 2 females swept from *Melilotus officinalis* (L.) Pallas, 28.vii.1962. Sandwich Bay, many moths swept from *M. officinalis*, 2.vii.1967; two cases on *M. officinalis*, 5.ix.1969.

C. frischella (L.) = *alcyonipennella* (Kollar). This species is similar to *C. paripennella* Zell. = *alcyonipennella* sensu P. & M., et auct. (Bradley, 1967). The only British *frischella* (L.) that I know of are four specimens in B.M.(N.H.) as follows: Corfe, Dorset, 29.v.1886 (male), 8.vii.1886 (male), 28.v.1887 (male) (all in E. R. Banks coll.); Lewisham, 20.vi.1850 (male) (in J. F. Stephens & H. T. Stainton coll.). There may be others in collections mixed with *paripennella*: they need dissecting.

C. spissicornis (Haworth). This moth which is widely distributed and frequently taken, has been known as an inhabitant of this country for over 150 years. According to Meyrick (1927), Ford (1949) and others *Trifolium arvense* L. is its only known foodplant, yet to my knowledge no one has ever confirmed this. Indeed, until 1973, I had never seen the case either figured or otherwise and knew of no one who had ever taken the larva.

In July 1973, I happened to be discussing the species with my friend A. A. Allen, who told me he had noticed the moths in some numbers when sweeping *Trifolium repens* L. in his garden at Blackheath at the beginning of the month. Accordingly, I visited the place on 9.vii.1973 and in a short time swept about fifteen *spissicornis*, most of which were worn. Revisiting the spot on 28.vii.1973, A. A. Allen helped me to fill two small plastic bags with the flower heads of *T. repens* which, on returning home, I transferred to two cloth bags. Upon examining the contents of these two days later I noticed there were four cases, and a further examination on 5.viii.1973 revealed a great many more, of which, however, only a few were full-grown. The fully formed *spissicornis* case compared with that of *deauratella*, is smaller, ribbed longitudinally and of an uniform paler reddish-brown. Moreover, unlike that of *deauratella* which has pale valves, *spissicornis* has no valves and is virtually impossible to detect among the florets of the dead flower-head (Plate VI, Figs. 3a–f).

C. deauratella Lienig & Zeller. Owing to the pale coloured valves, the cases are discernible among the dead flower-heads of *Trifolium pratense* L., though it is often no easy matter to spot them. Sleah Head, Kerry, an imago, 26.vi.1973. Ashted, Surrey, cases on *T. pratense*, 30.viii.1965. Addington, Surrey, cases on *T. pratense*, 25.viii.1970, bred 10.vii.1971. (Plate VI, Figs. 2a–d.)

C. conyzae Zell. Brighstone, Isle of Wight, cases on *Inula conyza* DC., 26.v.1969. Trottscliffe, cases on *I. conyza*, 20.v.1965, bred 24.vi.1965. Crofton, cases abundant on *Pulicaria dysenterica* (L.) Bern., 5.vi.1965. The species is often heavily parasitised.

C. lineolea (Haworth). The cases are frequent in many localities in Kent on *Ballota nigra* L. Wilmington, cases abundant on *B. nigra*, 30.iv.1965, bred 21.vi.1965; Sandwich, small case on *B. nigra*, 5.ix.1969; Greatstone, an imago

25.vii.1963 (gen. det. R.W.J.U.); Halling, cases on *Stachys sylvatica* L., 12.v.1957. Great Orme, Caerns., two cases on *Marrubium vulgare* L., 6.vi.1968.

C. hemerobiella (Scopoli). Dartford Heath, cases on hawthorn, 14.vi.1957, bred 5.vii.1957; Farningham, cases on apple, 8.vi.1969, bred 16.vii.1969. Addington, Surrey, case on pear, 20.vi.1969.

C. lithargyrinella Zell. Long known as *olivaceella* Stainton. A rather scarce and difficult case to obtain in my experience, this difficulty being enhanced by the fact that the feeding is apparently indistinguishable from that of the much more numerous *C. solitariella* and because the two species often occur together. Benfleet, Essex, one case on *Stellaria holostea* L., 16.vi.1963. Church Wood, Blean, cases on *S. holostea*, 25.iv.1965. Timberden Bottom, five cases on *S. holostea*, 23.iv.1972, one bred 25.vii.1972.

C. solitariella Zell. Timberden Bottom, Shoreham, 18 cases on *Stellaria holostea*, 23.iv.1972, in roadside hedge together with a few *C. lithargyrinella*. Benfleet, Essex, cases abundant on *S. holostea*, 16.vi.1963, many bred 28.vi.1963.

C. laricella (Hübner). Talybont, Breconshire, case on larch, 3.vi.1968. Tuddenham, Suffolk, cases plentiful on larch, 24.v.1964, bred 28.v.1964. Birch Wood, West Wickham, Kent, case on larch, 15.v.1965, bred 27.v.1965; small cases abundant 26.iv.1970.

C. wockeella Zell. Durfold Wood, Surrey, 2.xi.1969, two cases on *Betonica officinalis* L.; Fisherlane Wood, Surrey, 4.xi.1969, 15 cases on *B. officinalis*, bred 25.vi–20.vii.1970 (Chalmers-Hunt & Emmet, 1971). They are extremely local, many cases sometimes occurring on a single plant, whilst other plants nearby are unaffected. There is also some indication the species may move its metropolis from one wood to another, as at the B.E.N.H.S. field meeting on 8.xi.1970, despite prolonged search, only one example was found in these woods, but at Botany Bay Wood a miles or so away about 50 cases were located.

The species appears to suffer little from parasitism, and the only instance of this to my knowledge is of a single rymenopteron Mr. John Roche bred from a Botany Bay Wood case in 1971 and which he kindly gave me.

C. chalcogrammella Zell. All my examples come from Sandwich Bay, where Mr. R. W. J. Uffen first discovered the species as new to Kent in 1962. The cases are locally plentiful but difficult to spot owing to their smallness and the fact that they readily drop from the foodplant into the vegetation below. I have noted evidence of this species wherever I have found *Cerastium arvense* L. in the area, but failed to locate it in Thanet where the plant still persists along roadsides.

Sandwich Bay, 12 cases 26.v.1963; cases abundant 25.v.1965, bred 26.vii–10.viii.1965; cases and many signs of feeding 10.vi.1969; a few moths on the wing in late afternoon sun but very difficult to see, 31.vii.1965. An *Apanteles* sp. ?U group (petiole strongly sculptured) (det. G. E. J. Nixon) bred 10.viii.1965, is the only parasite of *chalcogrammella* of which I know. Tuddenham, Suffolk, larvae feeding on *C. arvense*, 24.v.1964.

C. tricolor Walsingham. An account of the history, re-discovery and rearing of this species by R. W. J. Uffen and myself is in preparation. East Wretham, Norfolk, male, 12.vii.1964; cases on *Acinos arvensis* (Lamarck) Dandy, 12.ix.1970, from which I bred three moths 9.vii(2) and 12.vii.1971.

C. lixella Zell. Cregneish, Isle of Man, 20.vii.1967, one fresh male, one very worn female ovipositing on flowers of *Thymus serpyllum* agg. in the warm afternoon sun and then imbibing from the same plant; Bradda, Isle of Man, two, 9.vii.1967. Near Headley, Surrey, 1.x.1971, collected flowers and seed-heads of *T. serpyllum* and on examining them 3.x.1971 found three cases and a few days

later 17 more from which I bred only one moth, 26.viii.1972. Otford, two, 19.vii.1959; Lydden, one, 1.vii.1969.

C. ochrea (Haworth). This species may have become much scarcer in recent years. R. W. J. Uffen and I searched assiduously but in vain for it on 26.v.1969 at Niton, Isle of Wight where S. Wakely took the cases in 1939; and A. M. Emmet, and I looked for it unsuccessfully on a number of occasions at Halling since A. A. Allen took two cases at the Society's field meeting there on 29.v.1958.

C. albidella H.-S. Sandwich, a case on *Salix repens* L., 3.viii.1957; Dungeness, two, 6.viii.1965 (gen.det.R.W.J.U.); Dartford Heath, one, 1.vii.1970 (gen.det.R.W.J.U.). Wicken Fen, Cambs., male, 11.vii.1970 (gen.det.R.W.J.U.).

C. anatipennella (Hübner). Wilmington, cases on hawthorn, 28.iv.1957, bred 9.vi.1957; one small case on sloe and several others on hawthorn, 30.v.1962. Holmwood, Dorking, empty case on sloe, 7.viii.1971.

C. currucipennella Zell. I have never yet taken this rare species. Snettisham, Norfolk, 30.vii.1967, A. M. Emmet missed a moth disturbed from oak and which settled momentarily on the trunk; he also found the characteristically shaped case on oak at Debden, Essex, but to his dismay it was empty.

C. ardeaepennella Scott. Holmwood, Dorking, Surrey, fixed cases numerous on uppersides of oak leaves, 17.vi.1971, fifteen moths bred 4-9.vii.1971. Orlestone, case on oak, 5.vi.1962, bred 3.vii.1962; Thornden Wood, case on oak, 29.v.1971, bred 6.vii.1971.

C. ibipennella Zell. Gussett Wood, Bucks., one at light, 3.vii.1966 (gen.det.R.W.J.U.). Holmwood, Dorking, Surrey, case on birch, 17.vi.1971. West Wickham, cases on birch 18.x.1971, bred 25.vi.1972; Chislehurst, case on birch, 30.v.1962, bred 19.vi.1962.

C. palliatella (Zincken). This fairly scarce and local species has a remarkable black pistol-shaped case with two very large lateral scaly flaps. Holmwood, Dorking, Surrey, 17.vi.1971, several cases already fixed for pupation on uppersides of oak leaves and all placed along the central rib, five bred 2-3.vii.1971, also two parasites. Chattenden, cases on oak, 26.vi.1960; Orlestone, two cases beaten from oak, c. 1950.

C. vibicella (Hübner). Ditchling Common, Sussex, 21.vii.1963, several freshly emerged, also cases fairly numerous fixed to stems of *Genista tinctoria* L., two bred early viii.1963 and large numbers of a small parasite.

C. conspicuella Zell. I have some of G. Elisha's Holmwood, Dorking, Surrey specimens dating from the 1880s, but know of no recent records from there or elsewhere in Surrey, where its best known locality was near Mickleham and where it was first taken in 1847 (Stainton, 1854). Elsewhere, the species appears to be confined to Essex and Kent with a very restricted more or less maritime distribution as follows: Benfleet, Essex (Harwood, 1903); I found cases locally abundant on *Centaurea nigra* L., 16.vi.1963, also plentifully on 9.v.1970 (with many small ones), bred 3.viii.1970. Woolwich Arsenal, cases plentiful on *C. nigra*, v.1963 (R. W. J. Uffen); Cuxton (Bower, 1908); Herne, several bred vii-viii.1939 from cases on *Centaurea* (P. F. Harris); Dungeness, one netted by me at dusk, 6.viii.1965.

C. vibicigerella Zell. W. Machin first discovered the species as new to Britain near Fobbing, Essex in vi.1883, and he and G. Elisha found many cases there on *Artemisia maritima* L. in the autumn of 1884, but I have no knowledge of its occurrence since anywhere in Britain except for one that L. T. Ford took many years later in Kent. On 1.x.1967 I lead a field meeting of the Society in the Fobbing area, purposely to try to rediscover the species, but failed to do so finding little of the foodplant there and that cattle had eaten much of what there was.

L. T. Ford netted a single *vibicigerella* at Funton, 4.vii.1929, which specimen

is in B.M.(N.H.). S. Wakely, R. W. J. Uffen, A. M. Emmet and I visited the spot on 25.iv.1965, but despite close and careful search of the *A. maritima* there failed to find it.

C. pyrrhulipennella Zell. Godshill, Isle of Wight, 26.v.1969, cases abundant on *Calluna vulgaris* and *Erica tetralix* L. (but seemingly with a preference for the latter), the top of a single plant of either sometimes bearing as many as six cases, eight moths bred 18.vi–2.vii.1969, also many parasites in late v.1969 of *Campoplex* (= *Omorgus*) sp. (det. J. F. Perkins). Hothfield, a very small case beaten from *C. vulgaris*, 4.iv.1972. One of the most heavily parasitised Coleophorids that I know.

C. serpylletorum Hering. I am indebted to H. N. Michaelis for showing me how and where to find the cases of this very local Coleophorid. Great Orme, Caerns., cases on *Thymus serpyllum* agg., 6–7.vi.1968, six bred 24.vii–11.viii.1968, and a parasite *Chelonus* sp. (det. G. E. J. Nixon).

C. vulnerariae Zell. Was first recorded as British from the Deal district of Kent prior to 1855. In 1888 and 1889 G. W. Bird (1889) found it in numbers at Walmer "flitting about from flower to flower of *Anthyllus vulneraria*", and subsequently took the larvae there on *A. vulneraria* L. and described the case. There are specimens in B.M.(N.H.) dated 1889–91, but so far as I am aware there is no more recent record. On 4.vii.1964, I led a field meeting of the Society at Deal the main purpose of which was to try to rediscover the species, but despite close search and sweeping of masses of the foodplant we drew a complete blank. Again, in July of the following year, I collected *A. vulneraria* seed-heads from a wide area in the vicinity of Deal hoping for the case but in vain.

C. albicosta (Haworth). Aldringham, Suffolk, plentiful by beating gorse; Minsmere, Suffolk, a few 7.vi.1966. Chislehurst, about 12 flying about gorse, 12.vi.1962; beat six cases from *Ulex europaeus* L., 19.x.1969; West Wickham, one at light, 7.vi. 1971.

C. saturatella Stainton. Dungeness, one at dusk, 5.viii.1965.

C. genistae Stainton. Redgrave Fen, Suffolk, cases plentiful on *Genista anglica* L., 2.vi.1967, but very heavily parasitised and only four moths bred, 21.vii.1967. Godshill, Isle of Wight, cases abundant on *G. anglica*, 26.v.1969. West Wickham, one at light, vi.1963.

C. discordella Zell. Langness, Isle of Man, 12.vii.1967, cases numerous on *Lotus corniculatus* L., growing in rock crevices, a parasite, *Orgilus* sp. male (det. G. E. J. Nixon), bred vii.1967; Bradda, Isle of Man, one, 9.vii.1967. Lydd-on-Sea, cases numerous on *L. corniculatus* growing on shingle, 31.v.1958, bred vi–vii. 1958; Trottescliffe, two, 21.vi.1958; Folkestone Warren, one, 6.vii.1958; Downe, a case on *L. corniculatus*, 16.ix.1962.

C. niveicostella Zell. A very local and rather scarce species in my experience. Trottescliffe, case on *Thymus serpyllum* agg., 21.v.1968; seven small cases on *T. serpyllum*, 5.v.1970, of which the larva of one was still feeding 1.vii.1970, two bred 14–21.vii.1970.

C. onosmella (Brahm). Camber, Sussex, two, 22.vii.1963. Dungeness, two moths and one case on *Echium vulgare* L., 22.vi.1957, bred vi.1957; from a case collected vii.1965 the parasite *Orgilus rugosus* Nees male (det. J. A. J. Clark) emerged 31.vii.1965; Halling, cases and moths on *E. vulgare*, 29.vi.1958; Hoads Wood, one, 23.vi.1956; Folkestone Warren, cases 10.vi.1962 from which many of a small parasite *Necremnus metalargus* (W.) (det. R. R. Askew) emerged.

C. silenella H.-S. Known for many years as *nutantella* Muhlig & Frey. Addington, Surrey, 5–6.ix.1966, cases on *Silene vulgaris* (Moench Garke), bred 28.vi.1967 also many parasites of *Copidosoma* sp. nr. *coleophorae* (det. B. R. Subba Rao). Dartford Marshes, four, 21.vi.1964.



FIG.1. *Coleophora leucapennella* (a) larval case attached to seed capsule of *Lychnis flos-cuculi* (b) the same, but also showing old feeding holes in capsules.

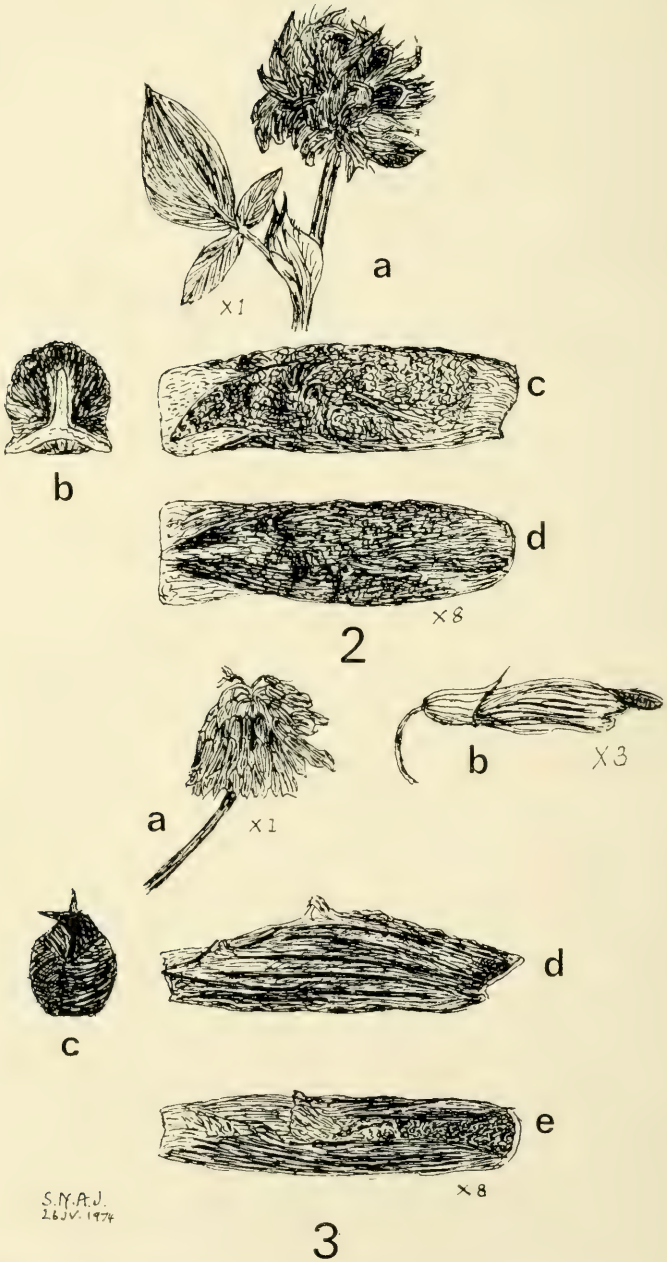


FIG. 2. *Coleophora deauratella* (a) dead flower head of *Trifolium pratense* with two larval cases attached (b), (c) & (d) views of the larval case.

FIG. 3. *Coleophora spissicornis* (a) dead flower head of *Trifolium repens*, larval cases invisible (b) floret of *T. repens* before habitation by a larva (c), (d) & (e) views of the larval case.



FIG. 4. *Coleophora virgaureae* (a) larval case on *Solidago virgaurea* (b) view of larval case.

FIG. 5. *Coleophora squamosella* (a) view of larval case (b) cases on seed-head of *Erigeron acer*.

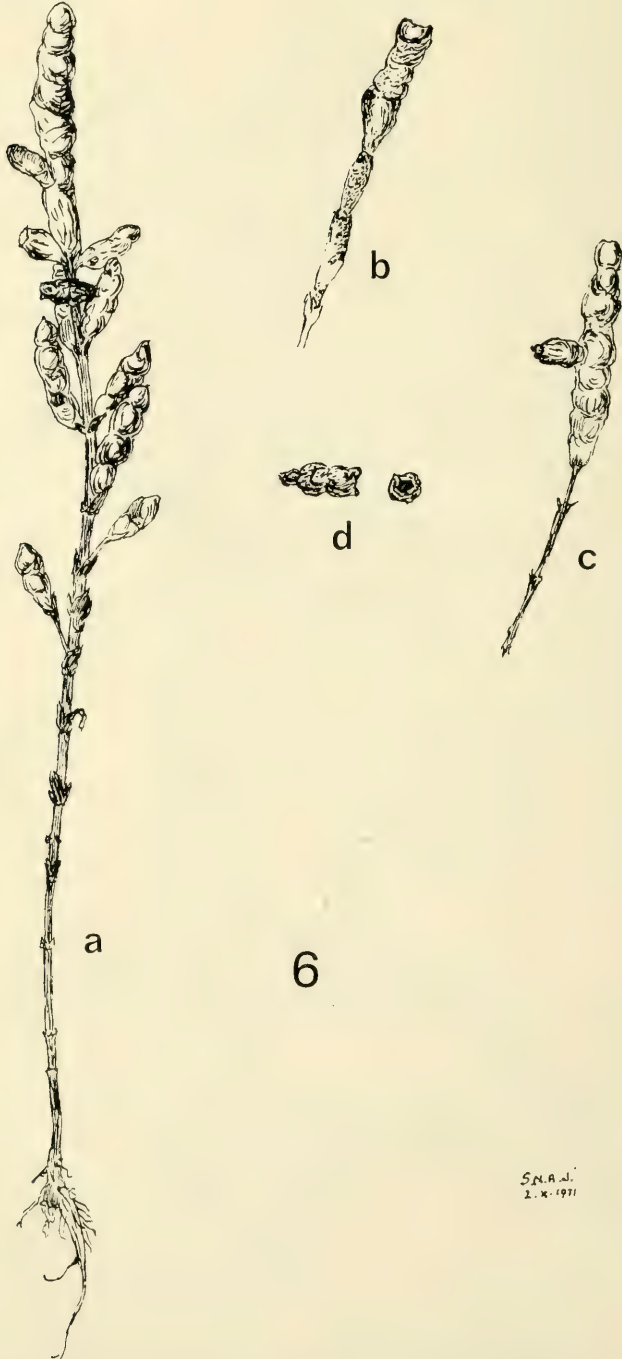


FIG. 6. *Coleophora salicorniae* (a) larval case on *Salicornia* sp. (b) top of stem where material for case has been removed (c) larval case on *Salicornia* sp. (d) views of larval case.

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C. otitae Zell. This species is one of the most local of our Coleophoridae being restricted to the area of shingle beach between Dungeness and Greatstone, Kent, where the cases are plentiful on *Silene nutans* L. Dungeness, cases abundant 22.vi.1957, bred vii.1957; Lydd Halt, cases abundant, many quite small, 26.v.1963; cases extremely plentiful in and around the edges of *S. nutans* plants, 29.vii.1965 bred viii.1965, also an apterous female parasite *Gelis instabilis* Fat. (det. J. F. Perkins) somewhat resembling an ant; Greatstone, one, 6.viii.1965.

C. striatipennella Tengström. Formerly known as *lineolea* Haw. and *apicella* Stainton. Effingham, Surrey, 30.viii.1965, cases abundant on *Stellaria graminea* L., bred 20–21.vi.1966. Bradda, Isle of Man, one, 9.vii.1967. Broad Oak, two, 13.vi.1965; Ham Street, one, 9.vi.1956. Ford (1949) gives July–August for the imago!

C. inulæ Wocke. Gurnard, Isle of Wight, two cases on *Pulicaria dysenterica* (L.) Bern, 28.v.1969; Bouldnor, Isle of Wight, several cases on *P. dysenterica*, 11.vi.1972, some larvae of which were still feeding in early viii.1972, one bred 27.v.1973. This rearing record confirms biennial life-cycles of *inulæ* found by J. H. Wood at Tarrington, Herefordshire and described by Banks (1899); Wood reared moths vii.1891 from larvae collected vii.1890, and found full-fed larvae and moths in this colony in alternate years.

C. troglodytella (Duponchel). Shanklin, Isle of Wight, cases abundant on *Pulicaria dysenterica* and *Eupatorium cannabinum* L. 18.v.1969, with perhaps a preference for the former, bred 16.vii.1969 (gen.det.R.W.J.U.). Kingsdown, Deal, cases abundant on *E. cannabinum*, 24.v.1962, female bred vi.1962 (gen.det. R.W.J.U.); cases abundant 31.v.1966 on *E. cannabinum* and *P. dysenterica*, moths from *E. cannabinum* bred 30.vi–5.vii.1966, those from *P. dysenterica*, 23.vii–8.viii.1966 (gen.det.R.W.J.U.); Folkestone Warren, male, 29.vii.1965 (gen.det. R.W.J.U.); [Chattenden, two cases on *Carduus arvensis* (L.) Scop., 4.vi.1958; ?*C. troglodytella* (Dup.)]

C. trochilella (Duponchel). Thorpeness, Suffolk, one, 8.vii.1964 (gen.det. R.W.J.U.); one, 15.vii.1965 (gen.det.R.W.J.U.). Greatstone, one, vii.1963 (gen. det.R.W.J.U.); Lydd, 6.vii.1963, case fixed to *Achillea millefolium* L., female reared 4.viii.1963 (gen.det.R.W.J.U.).

C. ramosella Zell. Poulisallagh, Co. Clare, 17.vi.1973, cases numerous on leaves of *Solidago virgaurea* L., six bred 2–31.vii.1973; Rinnamona, Co. Clare, 20.vi.1972, cases sparse on *S. virgaurea*. The majority of the cases were nearly full-grown, but a few which were very small were left as possibly going over another year.

C. peribenanderi (Toll). Crofton, one, 6.vi.1963 (gen.det.R.W.J.U.); Bromley, cases on *Carduus arvensis*, 12.x.1964, three bred 27.vi–9.vii.1965 (gen. det. R.W.J.U.); Farthing Street, cases on *C. arvensis*, ix.1957, bred 17.vi.1957.

C. paripennella Zell. Better known as *alcyonipennella* sensu P.&M., et auct. I have found the larvae in many localities in Kent, mostly on *Centaurea nigra* e.g. Biggin Hill, cases on *C. nigra*, 1.vi.1965 bred 27.vi–7.vii.1965; Bossingham, cases on *C. scabiosa* L., 23.v.1967; Crofton, case on *Serratula tinctoria* L., 5.vi.1965. Also Burren, Co. Clare, cases on *C. nigra*, vi.1973; Plaistow, Surrey, case on *Arctium lappa* L., 19.v.1957, bred vii.1957.

C. therinella Tengström. This is apparently one of the rarest of the Coleophoridae, and there are very few records of its occurrence at least for Britain. The foodplant and case are unknown. West Wickham, one at light, 6.vi.1963; St. Margaret's-at-Cliff, female, 2.vii.1965 (both gen.det.R.W.J.U.).

C. asteris Mühlig. Stone Marshes, cases extremely abundant in seed-heads of *Aster tripolium* L., 14.x.1969, bred 19–23.viii.1970; Stoke Saltings, one, 30.viii.1964, several, 29.viii.1965, several, 4.ix.1969 (all gen.det.R.W.J.U.).

C. argentula (Stephens). A common species as larvae in many parts of Kent and elsewhere but the moth seems to be less often observed. Ditchling Common, Sussex, four, 21.vii.1963. Hayes Common, cases on seed-heads of *Achillea millefolium*, x.1963, bred 25.vii–8.viii.1964; Birchington, cases, 16.ix.1971; Sandwich, two, 30.vii.1965.

C. virgaureae Stainton. Farningham Wood, cases on *Solidago virgaurea* L., 20.ix.1959; cases on *S. virgaurea* 3.x.1964, bred viii.1965 also numerous *Apanteles princeps* Wilk. (det. G. E. J. Nixon). (Plate VII, Figs. 4a–b.)

C. annulatella Tengström=*laripennella* sensu Meyrick et auct. Tooting Common, Surrey, one on an elm trunk, 11.vii.1957. West Wickham, two at light, 17.vii.1958; Bromley, cases on *Chenopodium album* L., 27.ix.1964, bred 9.vii.1965 (all gen.det.R.W.J.U.).

C. sternipennella (Zetterstedt)=*flavaginella* Lienig & Zell. Ashtead, Surrey, one, 1.viii.1959 (gen.det.R.W.J.U.). Point of Ayre, Isle of Man, one, 18.vii.1967 (gen.det.R.W.J.U.). Stoke Saltings, case on *Atriplex littoralis* L., 22.ix.1965 bred 20.vi.1966; Shoreham, 21.viii.1966 (both gen.det.R.W.J.U.).

C. adspersella Benander. Stoke Saltings, cases on *Atriplex littoralis*, ix.1965, three bred vi.1966 (gen.det.R.W.J.U.).

C. versurella Zell. Mortlake, Surrey, cases on *Atriplex* taken by S. Wakely, x.1969, from which I bred two moths, 11–16.viii.1970. St. Margaret's-at-Cliff, one, 2.vii.1965 (gen.det.R.W.J.U.).

C. squamosella Stainton=*erigerella* Ford. Chilbolton Down, Hants., cases on *Erigeron acer* L. 21.ix.1968, bred 6–21.viii.1969. Badgers Mount, cases on *E. acer*, 23.ix.1964. (Plate VII, Figs. 5a–b.)

C. pappiferella Hofmann. Cahir River, Co. Clare, I collected flower-heads of *Antennaria dioica* (L.) Gaert., 24.vi.1973, upon which cases of *pappiferella* appeared in some numbers about three weeks later.

C. laripennella (Zetterstedt)=*annulatella* sensu Meyrick. A local species that is perhaps restricted to East Anglia. Icklingham, Suffolk, about 12 moths by sweeping *Atriplex patula* L., 11.vii.1970; I collected bunches of seed-heads of *A. patula* on 12.ix.1970 and upon examining these a few days later found numerous cases of *C. laripennella*, moths bred 14.vi–19.vii.1971.

C. atriplicis Meyrick. Stanford-le-Hope, Essex, 1.x.1967, cases on *Halimione portulacoides* (L.) Aellen, bred 20.vi–2.vii.1968 (det.R.W.J.U.); Fobbing, Essex, cases on *Suaeda maritima* (L.) Dum., 1.x.1967, bred 14–19.vi.1968 (det.R.W.J.U.), also *Apanteles* sp. (*laevigatus*-group) (det. G. E. J. Nixon). Sheppey, one, 22.vi.1956 (gen.det.R.W.J.U.); Stoke Saltings, numerous cases on *Atriplex littoralis*, 22.ix.1965, bred vi.1966 (gen.det.R.W.J.U.).

C. moeniaceella Stainton=*muehligiella* Stainton nec Wocke=*flavaginella* sensu Meyrick=*suedivora* Meyrick. So far as I am aware this species has not been found for a great many years, although W. H. B. Fletcher formerly took it in numbers in Sussex (I have no knowledge of its occurrence elsewhere) among *Halimione portulacoides*. I possess six specimens (gen.det.R.W.J.U.) bearing the following particulars: 'Sussex W.H.B.F. 24.10.85' (5); 'Worthing W.H.B.F. 12.4.86' (1).

C. salinella Stainton. Stoke Saltings, cases plentiful on *Halimione portulacoides*, 24.x.1969, bred 25.vii–5.viii.1970 (det.R.W.J.U.).

C. artemisiella Scott. Fobbing, Essex, cases on *Artemisia maritima* L., 1.x.1967, bred 4.vi–2.vii.1968, also a number of small parasites of *Coposoma* sp. (det.B.R. Subba Rao) and a single male *Bracon* sp. (det. G. E. J. Nixon). Stoke Saltings, cases, ix.1962, 29.viii.1965 (mostly small and not fully-formed), and 7.x.1966.

C. artemisicolella Bruand. West Wickham, two cases on *Artemisia vulgaris*, ix.1959; 26.ix.1963, cases abundant by collecting a small bag of dead heads of

A. vulgaris the cases later being dislodged over a sheet by lightly drawing one's hand along the seed-heads, bred 24-27.vii.1964; Dartford Heath, one, 7.viii.1970 (gen.det.R.W.J.U.).

C. murinipennella (Duponchel). Talybont, Breconshire, two, 3.vi.1968; Llanbedr, Breconshire, one, 3.vi.1968. Thorpeness, Suffolk, male, 1.vi.1967. Mitcham, Surrey, numerous 12.v.1973.

C. antennariella H.-S. First discovered by Prof. E. G. R. Waters as new to Britain about 1925 at Stoke Row, Oxfordshire, where he took moths and found cases on *Luzula pilosa* (L.) Willd.—the case being “enclosed in a dead flower”. S. Wakely, R. W. J. Uffen and I visited the place on 22.iii.1966 to look for the cases, but despite close and prolonged search failed to find any trace of the species and only a little *L. pilosa*. I collected *pilosa* seed-heads there on 12.vi.1970, but saw no sign of cases despite keeping the seeds for several months and examining them in the bag at intervals.

C. sylvaticella Wood. Tintern, Monmouthshire, 31.v.1968, eleven moths disturbed from *Luzula sylvatica* (Hudson) Gaudin, all but four of which were worn, so a week earlier would have been better. Ellenden Wood, Whitstable, 10.vii.1971, collected a small bag of seed-heads of *L. sylvatica*, a number of small cases noted on side of bag a few days later; on 16.ix.1971 I collected 23 fully-formed cases, one moth bred early v.1972.

C. taeniipennella H.-S. Chippenham Fen, Cambs., several, 11.vii.1970 (gen.det.R.W.J.U.); Wicken Fen, Cambs., several, 30.vii.1967 (gen.det.R.W.J.U.). Debden, Essex, cases on *Juncus articulatus* L. taken by A. M. Emmet, x.1966, from which I bred moths 30.vi-12.vii.1967. Crofton, cases on *J. articulatus*, 28.ix.1969; Hothfield, cases, 4.iv.1972.

C. glauciolella Wood. I have taken this species in many parts of Kent, also in Essex, Suffolk and Perthshire. For examples: Stanford-le-Hope, Essex, cases on *Juncus maritimus* Lamarck, 1.x.1967, bred 11.vi.1968; cases on *J. gerardii* Lois., 22.ix.1969 bred vi.1970. Inver, Perthshire, one, 14.vii.1966. Farningham Wood, cases on *J. effusus* L., 3.x.1964, bred 12.vi.1965. Walberswick, Suffolk, several, 14.vii.1964. All examples gen.det.R.W.J.U.

C. tamesis Waters. Col. Emmet gave me in ix.1968 about 12 cases which he took on *Juncus articulatus* at Ballyconneely, Co. Galway, viii.1968, from which I bred a male and female 2.vii.1969 and a number of parasites. The case is similar in appearance to that of *C. taeniipennella*, but distinctly larger and more robust.

C. alticolella Zell. An abundant species in many parts of Kent; I have also taken it in Essex, Isle of Wight, Monmouthshire, Breconshire, Gloucestershire, Caernarvonshire and Perthshire. I have bred it from cases found on *Juncus effusus*, *J. articulatus* and *J. gerardii*. Except for the genitalia, which are quite distinct, I can see no difference between the moths or cases of this species and those of *C. glauciolella* Wood.

C. maritimella Newman. Better known as *obtusella* Stainton. Sandwich Bay, a small random sample of seed-heads of *Juncus maritimus* which I collected on 14.x.1970 produced some fifty cases of *maritimella* from which I bred a series 18.vi-14.vii.1971. The plant is locally abundant at this locality, so the cases presumably swarm there.

C. adjunctella Hodgkinson. Stanford-le-Hope, Essex, cases on *Juncus gerardii*, 9.viii.1971, bred 11-16.vi.1972. Graveney, two cases (larvae apparently dead) on *J. gerardii* 23.x.1970; many cases on *J. gerardii*, 3.viii.1971, bred 10-29.vi.1972.

C. caespititiella Zell. Known for many years as *agrammella* Wood. Crofton, one, 6.vi.1963. Stoke Row, Oxfordshire, one, 12.vi.1970. Both gen.det.R.W.J.U.

E. S. Bradford has taken the cases in small numbers on *Juncus articulatus* at Bricket Wood, Herts., in late autumn.

C. salicorniae Wocke. Fingringhoe Marsh, Essex, cases numerous on *Salicornia* sp. 9.x.1971 where R. W. J. Uffen discovered it in 1970 as apparently new to Essex though it had been previously taken in Sussex and Norfolk. From those I took in 1971, I bred a series 15–21.viii.1972 including a specimen tending to melanism. (Plate VIII, Figs. 6a–d).

C. clypeiferella Hofmann. Icklingham, Suffolk, 11.vii.1970, one swept from *Atriplex patula*; cases abundant on *A. patula*, 12.ix.1970, bred 7.viii.1971.

LITERATURE

There are, apart from Meyrick (1927, *Revised Handbook of the British Lepidoptera*) and Ford (1949, *Guide to the Smaller British Lepidoptera*) which of course cover the whole field of British Microlepidoptera, a small number of books that give a more specialised view of the Coleophoridae.

Stainton's *Natural History of the Tineina* (in 13 vols.) includes two volumes devoted to the Coleophoridae (published in 1859–60), illustrated with probably the finest coloured figures ever done on this group; they picture the perfect insects (both natural size and enlarged) and the larvae and their cases, together with the feeding sites. Then there are Hering's *Biology of the Leaf Miners* (1951), which has a most interesting chapter on the Coleophoridae and Count Toll's *Eupistidae of Poland* (1953), in Polish but with an English summary. But the latest monograph is Toll's *Materials for a Study of the Coleophoridae* (1962), unfortunately in German but containing nearly 1000 illustrations.

Besides the foregoing, there is a number of useful papers in the *Entomologist's Record*, *Entomologist's Gazette* and *Entomologist*, by A. Sich, H. J. Turner, E. C. Pelham-Clinton, J. D. Bradley, B. P. Beirne and others.

ACKNOWLEDGEMENTS

In conclusion, I wish to express my deep appreciation to Mr. R. W. J. Uffen for his kindness in determining genitally many specimens among the more difficult, species encountered, as well as for advice in the preparation of this paper. I also thank Mr. S. N. A. Jacobs for the drawings accompanying this paper; and Dr. J. D. Bradley for information on some of the species. Dr. R. R. Askew, Mrs. J. A. J. Clark, Mr. G. E. J. Nixon, Dr. J. F. Perkins and Dr. B. R. Subba Rao kindly determined many of the parasites bred, and to them I wish to extend my thanks.

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PROCEEDINGS

25th APRIL 1974

The President, Mr. C. MACKECHNIE JARVIS, in the chair

EXHIBITS

Dr. M. G. MORRIS—Two species of weevils from Porthcurno, Cornwall, collected 28.iii.74: 1. *Apion pomonae* (F.) (Col., Apionidae). A not uncommon species, feeding as a larva in the pods of *Vicia* spp. Well known to aggregate on trees in autumn. Common at Porthcurno on a variety of trees but mainly on *Salix cinerea* L. and *Prunus spinosa* L., also on *Sambucus nigra* L. 2. *Anthonomus rufus* Gyll. (Col., Curculionidae). A rare species in Britain but possibly overlooked. It feeds as a larva in fruit-buds of *Prunus spinosa*. It was plentiful at Porthcurno by beating blackthorn and also occurred at Trevorick near Padstow (25.iii.74) and at Grochell, Lizard (30.iii.74) on the same plant. It has not been recorded previously from Cornwall and the only records from the British Isles are those from Fairlight, Sussex, where it was discovered by W. H. Bennett in 1892, Killarney, Co. Kerry and Roudsea Wood, Lancashire where I took a singleton in March 1964. I have also had one from the Burren, Co. Clare.

A. rufus has only slightly bent tibiae and no teeth on the hind femora. There is much confusion in the British literature over the species of *Anthonomus* but a very full account of the western Palearctic species is given by Dieckmann (1968).

Dr. P. A. BOSWELL—Specimens of *Adalia decempunctata* (L.) (Col., Coccinellidae) beaten from fallow at Old Woking, Surrey, on 21.iv.74, to show the variation in markings.

COMMUNICATIONS

Col. A. M. Emmet reported that he had corresponded with the Editors of the Guinness Book of Records about the Society's opinion that the smallest British moth was in fact *Nepticula acetosae* Staint. He had received an enthusiastic reply stating that this would be corrected in the next edition.

Dr. P. A. Boswell reported that a colleague, Dr. M. J. Barnham, had taken the Dotted Chestnut (*Conistra rubiginea* D.&S.) (Lep., Noctuidae) in his light trap at Pulborough, Sussex on 3.iv.74, and enquired about its status in that part of the country.

Mr. G. Prior reported finding an Oak Beauty (*Biston strataria* Hufn.) (Lep.,

Geometridae) in Camden Town, London on 23.iv.74. Mr. R. F. Bretherton thought that this was a late record.

Dr. M. G. Morris reported the Holly Blue (*Celastrina argiolus* L.) (Lep., Lycaenidae) from Huntingdonshire on 7.iv.74 and Mr. E. H. Wild had seen it at St. Margaret's Bay over Easter.

Mr. Bretherton reported that he had already had in his light trap the Chocolate-tip (*Clostera curtula* L.) (Lep., Notodontidae) and the Muslin (*Diaphora mendica* Clerck) (Lep., Arctiidae) as well as other moths he would not normally expect until May.

Mr. M. A. K. Habershon gave a talk entitled, 'A Trans-Saharan Expedition', which he illustrated with colour slides. Afterwards he answered questions about the journey and exhibited some Lepidoptera which had been collected.

9th MAY 1974

The President, Mr. C. MacKECHNIE JARVIS, in the chair.

The death was announced of Viscount Bolingbroke.

The following new members were declared elected: Messrs. D. R. Nash and T. Smith.

EXHIBITS

Mr. P. VERDON—Two specimens of *Lampropteryx suffumata* D.&S. (Lep., Geometridae) (Water Carpet) taken at Thorndon Park, Essex in April 1974. It was common at a tungsten trap, although not at mercury vapour traps.

Mr. K. W. MARDLE—A male specimen of the rare *Megophthalmidia crassicornis* Curtis (Diptera, Mycetophilidae) taken at Perivale Woods Nature Reserve, London on 29.vi.72. It had been determined by Mr. L. N. Kidd. It has been recorded from Surrey, Staffordshire and the New Forest.

Col. A. M. EMMET—Specimens of *Leucoptera orobi* Stainton (Lep., Lyonetiidae). Both Meyrick and Ford state that this species is bivoltine, with the larvae feeding in June and August and the adults flying in May and July. The series exhibited, reared from larvae taken at Ballyeigher Wood, Co. Clare (Burren) and Ballinabrinch, Co. Galway in July 1969 and July 1973 suggest: (1) that the species is predominantly univoltine; (2) that both the larvae and imagines appear a month later than the text books state. It is possible that these observations are applicable only to Irish specimens.

Mr. B. C. JACKSON—Living specimens of *Anthrenus museorum* (L.) (Col., Dermestidae) found among a collection of birds' eggs.

Mr. E. S. BRADFORD—The rarely found cocoons and pupal skins of *Adela reamurella* L. (Lep., Incurvariidae) which he had discovered after careful search in leaf litter amongst various trees in the East Blean area of Kent. The moths emerged on 7 and 8.v.74.

ANNOUNCEMENTS

Mr. K. W. Mardle talked about a group called the Insect Behaviour Study Group which was intended to carry out simple entomological projects. He said that literature was available from him.

COMMUNICATIONS

Mr. J. M. Chalmers-Hunt had seen a specimen of *Pieris napi* L. (Lep., Pieridae) in Fleet Street in the City of London on 8.v.74.

Dr. L. R. Taylor gave a talk entitled 'The Rothamsted Insect Survey', which he illustrated with slides, many showing the distributions of aphids and moths. This was followed by a discussion.

23rd MAY 1974

The President, Mr. C. MACKECHNIE JARVIS, was in the chair.

The following new members were declared elected: Messrs. J. W. Beard, P. D. J. Hugo and R. J. Smith.

EXHIBITS

THE PRESIDENT—Living examples of *Anthrenus sarnicus* (Mroczkowski) (Col., Dermestidae) from an office at 39 Victoria Street, London, S.W.1, collected from 16.v.74 to 23.v.74. The beetles had been found in these premises since the exhibitor first moved in during March 1969. This species was described from Guernsey, C.I., in 1962, but was brought to general notice by an article in the *Entomologists' Monthly Magazine* in 1969 (p. 119) which recorded that it appeared to be spreading and referred to six reports from London since 1962.

Col. A. M. EMMET—An imago and cases containing living larvae of *Lampronia praelatella* D.&S. (Lep., Incurvariidae), together with leaves of *Fragaria* showing the prehibernation mine and 'cut-out' and the post-hibernation pattern of feeding. The purpose of the exhibit is to amplify and correct the published accounts of its life history.

The eggs are laid in leaves of *Fragaria* and the larvae start feeding in July as leaf-miners, the mine being situated on the margin of the leaf, quite frequently near the apex. At the end of the month or at the beginning of August they excise their first case. Like some other members of the genus (e.g. *oehlmanniella* Treits.), *praelatella* prefers its food to be withered and when it recommences feeding in the spring it severs about one-third of a leaf which it fastens with silk to the lower surface of its case, at the same time spinning its case securely to the underside of a leaf (usually the one from which the segment has been excised). The case is thus 'sandwiched' between the growing leaf and the severed fragment. The larva then proceeds to feed in the withering leaf fragment.

That the purpose of this procedure is to secure partially withered food and not concealment is demonstrated by the fact that in captivity, when the leaves provided as pabulum are already starting to wither, the larvae cease to sever sections and feed directly on the foodplant without spinning their cases to a leaf. In these circumstances they drop readily as described in the text books, but in natural conditions the case is firmly attached. The rather fluffy pale edges to the case consist of the numerous severed strands of silk which once fastened it to the underside of a leaf. When pupation takes place within the case, the larval exuvium is expelled.

The material exhibited was taken at Arnside in Westmorland, the cases being found on *Fragaria* growing beneath trees or in open woodland; they were not observed in more exposed situations. When searching for larvae, one should look for leaves with the apical third severed; there is then a probability that the case will be found spun beneath the leaf.

Mr. E. S. BRADFORD—A specimen of *Nemophora degeerella* L. (Lep., Incurvariidae) and the case from which it emerged. The case, made of leaf fragments, was found in litter under trees at East Blean, Kent on 15.iv.74, still containing a larva. The imago emerged 23.v.74.

Mr. R. G. ELSE—The following local British bees: 1. *Hoplitis claviventris* (Thomson) 4 males, 4 females, bred 2–10.v.74, from dead, dry *Rubus fruticosus* (L.) agg. stems lying on short, downland turf of south-facing escarpment, Oxenbourne Down, S. Petersfield, Hampshire. Two nests of this species, with vacated cells in situ, also exhibited. Data the same. 2. *Stelis ornatula* (Klug)—1 male, 1 female bred 29.iv–8.v.74. The rare cleptoparasite of *H. claviventris*. Eight of these bees were reared from *claviventris* nests in *Rubus* stems. 3. *Andrena bucephala* Stephens—2 males, 2 females, Arundel Park, West Sussex, 11.v.74, G. R. Else, C. Haes, M. Edwards. Several males on hawthorn blossom, many females entering and leaving a rabbit burrow in a south-facing chalk escarpment. This *Andrena* is of very local occurrence in southern England and, in common with the rare *A. ferox* Smith, the nesting females share a common entrance in the soil. Presumably the galleries excavated by individual females branch away from the main burrow. We did not see the actual nest entrance but it was evidently well inside the rabbit burrow—some bees were also leaving from what was probably a bolt hole to the same warren.

Mr. C. O. HAMMOND—A short series of *Cryptocephalus hypochaeridis* (L.) (Col., Chrysomelidae) taken at Ventnor, Isle of Wight, 14–16.v.74, to show the colour range from blue-green to copper-green.

Mr. A. E. STUBBS—Two common hoverflies (Diptera, Syrphidae) which mimic hairy bees: *Eristalis intricaria* L. and *Merodon equestris* F. They are distinctive amongst such mimics in having wing vein R_{4+5} looped; however, the two species are easily confused. The simplest diagnostic character is the shape of the hind legs: *E. intricaria* has simple femora and tibiae, but in *M. equestris* they bear conspicuous swellings.

Dr. P. A. BOSWELL—Workers of the local myrmicine ant *Stenamma westwoodi* Westwood taken in a bird's nest on a shady bank at Old Woking, Surrey on 19.v.74. He demonstrated the defensive attitude taken by this ant, which lies immobile on its back with its legs in the air and contrasted this with *Myrmecina graminicola* Lat., which lies on its side with its legs drawn in.

COMMUNICATIONS

Dr. C. G. M. de Worms reported seeing *Leptidea sinapis* L. (Lep., Pieridae) in large numbers at Chiddingfold, Surrey on 19.v.74. *Boloria euphrosyne* L. (Lep., Nymphalidae) *Celastrina argiolus* L. (Lep., Lycaenidae) *Gonepteryx rhamni* L. and *Anthocaris cardamines* L. (Lep., Pieridae) were also plentiful. His light-trap had produced an early specimen of the Figure of Eight (*Tethea ocularis* L.) (Lep., Thyatiridae) on 18.v.74, an Alder Moth (*Acronicta alni* L.) (Lep., Noctuidae) on 21.v.74, an early example of the Sycamore Moth (*Acronicta aceris* L.) (Lep., Noctuidae) and, on 21.v.74, a Pine Hawk (*Hyloicus pinastri* L.) (Lep., Sphingidae). Mr. C. O. Hammond had found the Glanville Fritillary (*Melitaea cinxia* L.) (Lep., Nymphalidae) flying at Ventnor, Isle of Wight between 14 and 16.v.74. Col. Emmet had seen *Hamearis lucina* L. (Lep., Nemeobiidae) at Arnside, Westmorland the week before the meeting. Dr. P. A. Boswell reported *Vanessa atalanta* L. (Lep., Nymphalidae) from Old Woking, Surrey on 15.v.74; Mr. S. N. A. Jacobs reported a specimen from Ashdown Forest on 19.v.74.

Mr. M. G. Ventom reported an example of *Tyria jacobaeae* L. (Lep., Arctiidae) which had overwintered twice as a pupa. The larva had pupated in November 1972 and the imago had emerged on 20.v.74.

Mr. Bradford reported the emergence of a Gold Swift (*Hepialus hecta* L.) (Lep., Hepialidae) from litter collected from an area where little bracken occurred.

Mr. C. O. Hammond showed colour slides of butterflies.

13th JUNE 1974

The President, Mr. C. MACKECHNIE JARVIS, in the chair.

EXHIBITS

Col. A. M. EMMET—Seven specimens of *Scythris fallacella* Schläger (Lep. Scythrididae) captured at Arnside Knott, Westmorland on 16.v.1974. This species was introduced to the British List by Pierce and Metcalfe in 1935 (*Entomologist*: 68, 49), when they discovered specimens included in series of *S. fuceoaeenea* Haworth in several collections. The only locality mentioned by the authors is Grange-over-Sands, which is about three miles from Arnside Knott across the headwaters of Morecambe Bay. The larva of *fallacella* feeds on *Helianthemum* spp.

Also shown were specimens of *S. picaepennis* Haworth from Portland, Dorset and *S. vagabundella* H.-S. from West Galway. The status of *vagabundella* is uncertain and, in the 1972 'Kloet and Hincks', it is doubtfully synonymised with *picaepennis*, no difference having been detected in the genitalia. However, the two are very dissimilar in appearance, *vagabundella* having the forewings deep purple with violet reflections and without the whitish hair-scales present in *picaepennis*.

Living imagines of *Lampronia praelatella* (Lep., Incurvariidae) from Westmorland and *Nepticula acetosae* Staint. from Suffolk were also shown.

Dr. M. G. MORRIS—Four examples of the weevil *Rhinoncus albicinctus* Gyll. (Col., Curculionidae) from the Berkshire side of Virginia Water, 4th June 1974. Four specimens of *R. perpendicularis* (Reich) from England and Ireland were shown for comparison. *R. albicinctus* was first taken in Britain in July 1972 by Mr. A. A. Allen at this same locality (*Entomologist's mon. Mag.* (1973), 109, 188–190). Three specimens were taken in all by Mr. Allen and Mr. G. Shepherd, by sweeping the lakeside vegetation, on 15th and 19th July. Hoffmann and other authors agree that *Polygonum amphibium* L. is the foodplant.

I visited the locality three times in 1973 but took no specimens after sweeping in the area for a prolonged period. Wanting to know more about the habits of the weevil I read Herr Dieckmann's account of the Ceutorhynchine weevils of East Germany (*Beitr. Ent.* (1972) 22, 1–128). The information given was most revealing: 'Die Käfer sitzen auf den schwimmenden Blättern oder in den Blüten und können dann nur mit Hilfe eines Bootes gesammelt werden.' When I visited the site on 4th June of this year although I had no boat I searched the floating leaves of *Polygonum amphibium* f. *natans* and almost immediately found a *R. albicinctus* just as described by Dieckmann. In all I obtained five specimens in about an hour and a half by this method—a much more leisurely one than sweeping.

One other interesting fact is that *R. albicinctus* swims on the surface of the water very readily when dropped in. It has a typical 'breast stroke' method exactly similar to that used by the weevil *Phytobius canaliculatus* Fähr. and which I described a few years ago.

R. albicinctus and *R. perpendicularis*, its nearest British ally, are classified in the subgenus *Amalorhinoncus* Wagner.

Mr. B. C. JACKSON—Four specimens of *Eupithecia insigniata* Hübn., (Lep., Geometridae) taken at M.V. light at Huntingdon on 18.v.74. Also a specimen of *Rhamphomyia marginata* F. (Dipt., Empidae) found inside the exhibitor's car at Ashford, Kent on 11.v.74 by Mr. Butterfield. This species was recently introduced to the British List by Mr. P. J. Chandler.

Mr. C. O. HAMMOND—A living female of the rare dragonfly *Leucorrhinia dubia*

Van der Lind from a S.W. Surrey locality on 12.vi.1974. This species frequents marshy localities in the neighbourhood of pine trees. It is sexually dimorphic: the adult female has yellow markings on black, the adult male is red and black.

Mr. M. G. VENTOM—A living imago of *Zeuzera pyrina* L. (Lep., Cossidae) which had emerged on 9.vi.1974 from a piece of hornbeam. The larva had been exhibited at the meeting of 24.i.1974.

COMMUNICATIONS

Mr. R. F. Bretherton had visited Chiddingfold, Surrey on 11.vi.1974 and seen many butterflies, both in numbers and species. Worn specimens of *Boloria euphrosyne* L. and fresh *B. selene* D.&S. (Lep., Nymphalidae) were seen. However *Euphydryas aurinia* Rott. was apparently absent, as were both the Bee Hawkmoths.

Mr. E. S. Bradford reported that he had recently had emerge a specimen of the Rosy Footman (*Miltochrista miniata* Hübn.) (Lep., Arctiidae). The larva had been found amongst leaf litter on which it had fed up. In the same litter were many larvae of *Endotricha flammealis* D.&S. (Lep., Pyralidae).

Lt. Col. C. N. Claydon gave a talk entitled, 'Conservation and Defence Department Lands' and received advice from members concerning entomological matters. He also showed colour slides of Malaysian birds.

27th JUNE 1974

A Vice-President, Dr. M. G. MORRIS, in the chair.

EXHIBITS

Dr. M. G. MORRIS—Two female specimens of the ant-mimicking bug *Systellonotus triguttatus* (L.), taken from underneath *Echium vulgare* L. at Porton Ranges (Hampshire side) on 19.vi.74. One of the specimens was reared from a fifth instar larva, which also greatly resembles an ant, and emerged 25.vi.74. Also a male from Great Culand, Kent, 20th July 1960; this sex is fully winged but macropters are very rare. Southwood & Leston (*Land and Waterbugs of the British Isles*, 1959) record *S. triguttatus* from sandy and heathy localities, but both Porton and Great Culand are on chalk. For comparison, the other species of British *Hallodapini* were shown. A macropterous male and brachypterous female of *Hallodapus rufescens* (Burm.) from Brimsdown Hill, Wilts. 1.viii.67; the macropterous form is said by Southwood & Leston to be rare. These authors give heaths as the habitat but *H. rufescens* is often common on chalk, a fact which Mr. G. E. Woodroffe first drew attention to (*Entomologist's mon. Mag.* (1960) 96: 109). Brimsdown Hill is on chalk and I have also had the bug from chalk hills in Beds. and Oxon. Brachypterous male and female specimens of *Hallodapus montandoni* (Reut.) a much rarer species than *H. rufescens* from the well-known locality at Great Culand, Kent, 16 and 20.vii.60, where the late Dr. Massee introduced one to the species.

Mr. R. F. BRETHERTON—A pupa of *Pterophorus galactodactyla* D.&S. (Lep., Pterophoridae).

Col. A. M. EMMET—A specimen of *Stigmella atricapitella* Haw. (Lep., Neptilulidae) from Redgrave Fen, Norfolk. The mine containing the larva was collected on 17.xi.73. The green island in which the mine was situated was unusually small and inadequate for the larva's requirements. After all the green parenchyma had been consumed, the larva ate its frass.

Nepticulid larvae feed very rapidly and the food passes through the gut in a matter of minutes; consequently it is probably that the food is only partially digested, and an unusually large amount of frass is excreted in comparison with other leaf-mines. It is, therefore, reasonable to suppose that the frass still has nutritive value.

The mine in question was shown, together with normal mines of *atricapitella* belonging to the summer and autumn generations. Mines of a *Phyllonorycter* sp. and a dipteran were also shown to illustrate the small amount of frass they contained in comparison with the Nepticulid mines.

Mr. A. E. STUBBS—The following rare Diptera taken in Windsor Forest on 29.v.74: *Pocota personata* Har., *Calliprobola speciosa* Ros., *Psilota anthracina* Mg. (Syrphidae) and *Limonia quadrimaculata* L. (Tipulidae).

COMMUNICATIONS

Mr. Bretherton reported the capture of a male *Dioryctria abietella* D.&S. (Lep., Pyralidae) at light at Bramley, Surrey, 25.vi.74. It belonged to the biological race, wrongly identified in the past as *D. splendidella* sensu auct. which probably occurs in Britain only as an immigrant.

Mr. E. H. Wild conjectured on the association of the Heart and Dart Moth (*Agrotis exclamationis* L.) (Lep., Noctuidae) with man. He reported that recently in an urban environment, 400 or 500 moths taken each night were this species. In non-urban localities, not far away, the species was much less common.

Commenting on Mr. Stubbs's exhibit, Mr. C. O. Hammond reported finding *P. anthracina* on hawthorn in Richmond Park, Surrey on 26.v.74.

Following an introductory, illustrated talk about the Galapagos Islands by Mr. R. Perry, Mr. A. H. Hayes gave a talk entitled 'Galapagos Moths'.

11th JULY 1974

The President, Mr. C. MACKECHNIE JARVIS, in the chair.

The death of Mr. C. W. Mackworth-Praed was announced.

The following new members were declared elected: Messrs. V. Fleming, R. J. H. Heckford and P. Stedall.

EXHIBITS

Mr. G. PRIOR—Dead specimens of the Colorado Beetle (*Leptinotarsa decemlineata* Say) (Col., Chrysomelidae) from Italy.

Mr. C. F. DEWHURST—A specimen of the local *Agapanthia villosa viridescens* (L.) (Col., Cerambycidae) taken in Bernwood Forest, Stanton St. John, Oxon. on 7.vii.74.

Mr. R. K. MERRIFIELD—A dark example of *Thymelicus sylvestris* Poda (Lep., Hesperidae) taken near Bodmin, Cornwall on 28.vii.70, which superficially resembled *T. lineola* Ochs.

Dr. J. NEWTON—A specimen of *Volucella inanis* L. (Diptera, Syrphidae) shot by his son in North London. He added that he was not aware of any hornet nests, in which the larvae are said to breed, for many miles.

Mr. E. P. WILTSHIRE—A male *Photodes morrisii* Dale (Lep., Noctuidae), recorded from France for the first time. During June 1974 about ten males of this local species were taken, mostly on one evening, flying up from grass at the foot of chalk cliffs at Cap le Hode, near the Route Nationale between Le Havre and

Tancarville, Seine-Maritime, just before dark. The form resembles German examples from Pomerania and is less strongly marked than the series from Folkestone in the R.C.K. collection in the British Museum (N.H.). Identity of the specimens had been confirmed by study of the genitalia.

Mr. E. S. BRADFORD—A preserved larva of *Hypsopygia costalis* F. (Lep., Pyralidae) which had been found in stables at Fox's Cross Road, Whitstable, Kent on 18.iv.74.

COMMUNICATIONS

Professor B. C. Clarke gave a talk entitled 'How predators maintain polymorphism'. This was followed by a lively discussion.

25th JULY 1974

The President, Mr. C. MACKECHNIE JARVIS, in the chair.

The death was announced of Mr. G. R. Gradwell, a prominent non-member.

The following new members were declared elected: Messrs. B. A. Coram and R. E. Smith.

EXHIBIT

Dr. P. A. BOSWELL—A specimen of *Pentatoma rufipes* (L.) (Heteroptera, Pentatomidae) from Old Woking, Surrey, 13.vii.74. The specimen was much paler than that illustrated in Southwood and Leston, but was well within the range of those present in the Society's Collection.

COMMUNICATIONS

Mr. J. M. Chalmers-Hunt reported that, three weeks previously, a number of members of the Kent Naturalists' Trust had seen two Humming-bird Hawks (*Macroglossum stellatarum* L.) (Lep., Sphingidae) at Boughton Monchelsea, Kent. He added that, following an enquiry by the Ministry of the Environment, permission for any development at Sparrow Wood and Crofton Heath, Orpington, Kent had been refused.

Mr. E. H. Wild had found the rare *Lozotaeniodes formosanus* Geyer (Lep., Tortricidae) at Selsdon, Surrey.

Mr. E. S. Bradford said that among leaf litter he had collected in early April there were pear-shaped leaf-fragment cases which he did not recognise. Nothing had emerged from them, but now three were moving around and he awaited their true identity.

Dr. P. A. Boswell showed colour slides of insects.

12th SEPTEMBER 1974

The President, Mr. C. MACKECHNIE JARVIS, in the chair.

The death was announced of a former member, Mr. H. W. Forster.

EXHIBITS

THE PRESIDENT—A specimen of *Lathrobium fennicum* Renk. (Col., Staphylinidae) which was new to the British list when he recorded it from Tresco, Scillonia, Cornwall (*Ent. mon. Mag.* 1968, **104**: 123). It has subsequently been retaken on return visits to the Scilly Isles, but only in the original locality.

Mr. L. J. D. WAKELY—A specimen of *Mythinna vitellina* Hübn. (Lep., Noctuidae) taken on the night of 17–18.viii.74 at a M.V. trap in a garden at East Horsley, Surrey. There are probably only about ten records of this species from Surrey since the war.

Mr. E. S. BRADFORD—Eggs laid by a tortoise in Whitstable, Kent. The tortoise is probably more than fifty years old and only started laying during the last few years. When seen three weeks ago it had laid about eight eggs.

Mr. S. A. KNILL-JONES—Aberrations of *Agrotis puta* Hübn. and *Luperina testacea* D.&S. (Lep., Noctuidae), both taken at Freshwater, Isle of Wight on 28.v.73 and 6.ix.73. Also an example of *Cynaeda dentalis* D.&S. (Lep., Pyralidae), which is probably a migrant or stray, taken at Freshwater, 28.vii.74.

Mr. M. G. VENTOM—Larvae of *Ourapteryx sambucaria* L. (Lep., Geometridae) and *Euproctis similis* (Fuess.) (Lep., Lymantriidae) for distribution among members.

Prof. J. A. OWEN—A female of the Timberman (*Acanthocinus aedilis* (L.)) (Coleoptera, Cerambycidae) which had emerged from a log in his garden in Surrey. This large log had been brought from Aviemore, Inverness, Scotland last year.

COMMUNICATIONS

Mr. G. S. E. Cross had seen a female *Cynthia cardui* L. (Lep., Nymphalidae) at Bridport, Dorset, 8.ix.74 and Mr. S. R. Bowden had seen one near St. Albans, Herts., 11.ix.74. Dr. B. J. MacNulty had seen few *Vanessa atalanta* L. (Lep., Nymphalidae) and *Autographa gamma* L. (Lep., Noctuidae) lately. Mr. Ventom said that both were common in South Dorset in early August. Dr. C. G. M. de Worms had seen many *A. gamma* at the Lizard, Cornwall in late June, while Prof. Owen had seen *V. atalanta* at Oban, Scotland in early June.

Commenting on Mr. Wakely's exhibit, Mr. R. F. Bretherton said that the week before its capture he had taken other migrants. He thought that this and the weather maps made it likely that a migration of many moths was taking place at that time. He thought that *M. vittellina* was always a migrant, certainly the pale form, but there were suggestions that it breeds on the south coast.

Mr. S. N. A. Jacobs had just returned from a fortnight in France. During that time he had found only two nepticulid mines of the '*ruficapitella* group'. A few years ago he had found as many as six or seven mines of *Phyllonorycter rajella* L. (Lep., Gracillariidae) on each leaf of alder in Switzerland, but in France he had seen none.

Mr. D. Stimpson said that a pair of tortoises which had not hibernated mated for the first time this year. When they had been left with others while he was on holiday the male had mated with other females. Mr. Bretherton remembered a pair of tortoises at Oxford before the war which had produced a male infant (recorded in the *Times*).

Mr. Gaston Prior gave a talk entitled 'Collecting in the Appenines, Land of the Blue Butterfly', which he illustrated with colour slides.

THE LONG EMERGENCE PERIOD OF THE MEADOW BROWN

With the exception of the Small Heath (*Coenonympha pamphilus* L.) and the Wall Brown (*Lassiomata megaera* L.) all our Satyrs are single brooded yet the Meadow Brown (*Maniola jurtina* L.) is with us on the wing from early June until mid-September. I had often wondered whether it were possible that the first emergences in June could give rise to a second generation in August, as occurs with the first two mentioned species. This spring I spent some time on an area of the old marshalling yards at Feltham, Middlesex collecting up the overwintered larvae of *M. jurtina* which in the evening were quite easy to find among the grass tufts. The sizes of the larvae ranged from about three parts fed to larvae of little more than $\frac{1}{4}$ inch. I placed these in one of my outdoor cages on clumps of grassy turf and left them to it. The first specimen, a male, emerged on the 5th June and further emergences occurred regularly until the last on the 15th August, a female. It would appear that here in the south of England this is the normal pattern of the butterfly's life history and it would be interesting to know whether the early emergers give rise to progeny which will produce the early ones of the following year, while those that emerge at the end of the summer are the parents of next year's August specimens. This would make a worthwhile study for one of our younger members and it would be interesting to consider whether there is any difference between the early and late specimens. Such difference could well have developed as the 'earlies' would not have a chance of meeting up with the 'lates'. In the Feltham colony there is a great diversity in the females at all times of the season, both as to size and pigmentation of forewing area around the eye spot and albino forms are not uncommon. It is also noticeable that following a period of very sunny weather, the number of pallid specimens increases and I would hazard a guess that a certain amount of 'light' bleaching takes place. Similar forms can be produced by leaving set specimens in strong sunlight and I see no reason why it should not occur while the insect is on the wing.

1.ix.1974.

P. W. CRIBB

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are held regularly at the Society's Rooms, but the well-known ANNUAL EXHIBITION takes place in the autumn in external accommodation. Frequent Field Meetings are held at weekends in the Summer. Visitors are welcome at all meetings. The current Programme Card can be had on application to the Secretary.

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RELATION OF *PIERIS MELETE* MÉNÉTRIÈS TO *PIERIS* *NAPI* L. SSP. *MELETE* (LEP., *PIERIDAE*)

by S. R. BOWDEN

(53, Crouch Hall Lane, Redbourn, Herts.)

At the very beginning of his admirable work (1960–1969) Sheljuzhko remarked that the *Pieris melete* complex and the nearly related east-Asiatic *napi* forms still presented many uncertainties. There has been disagreement in the past about many Asiatic Pierids fairly well represented in our museums: are they subspecies of *P. napi* or of *melete*, or distinct species, and if the last, what are their affinities? In this subgenus (*Artogeia* Verity) genitalia are of limited assistance, and the museum worker really had little to help him until Warren (1961) pointed out the striking difference in the male scent-cells of *napi* and *melete* and commented on other androconial differences between the problematic taxa.

Some acquaintance with Asiatic *napi* and *melete* subspecies is necessary for an intelligent treatment of North American *Pieris* 'napi', most populations of which must be successors of original invaders via Beringia. The direct comparison of Nearctic subspecies with European seems unlikely to throw much light on the evolution of either geographic group. Bringing in the Asiatic insects, one can hope to use any stable, non-adaptive characters which they have in common to establish affinities.

In particular, many Asiatic veined-white subspecies share the very sharply defined 'acuta' underside marking typical of the American 'napi' subspecies, *oleracea* Harris; the similarity in the environmental control of its expression suggests similarity of genetic basis, which on one view implies a common origin, and thus the derivation of *oleracea* from an Asiatic stock.

The present paper describes initial experiments with the nominotypical *melete* subspecies of Japan and European *napi*.

MATERIAL EMPLOYED

Pieris melete

Stock from near Tokyo was received as follows:

April 1972	eggs collected wild	ref. 1972- <i>J</i> ⁱ ,
April 1972	eggs laid by a single female	ref. 1972- <i>J</i> ⁱⁱ ,
end May	38 pupae from wild population	ref. 1972- <i>J</i> ⁱⁱⁱ .

Breeding this species in a cool English summer proved rather unsuccessful: although the young larvae appeared to prefer *Alliaria* to several other Cruciferae, they did not thrive upon it. *Lunaria* and *Dentaria* were not eaten. A change to cultivated mustard (*Sinapis alba* L.) was found advantageous, but the abnormally low summer temperatures restricted pairings, oviposition and larval growth. Losses in the earlier broods seem to have been sexually selective, though in opposite senses.

June	♀ <i>J</i> ⁱⁱⁱ × ♂ <i>J</i> ⁱⁱⁱ	produced 22 ♂ + 4 ♀, ref. 1972- <i>j</i> ⁱ ,
June	♀ <i>J</i> ⁱⁱⁱ × ♂ <i>J</i> ⁱⁱ	produced 1 ♂ + 8 ♀, ref. 1972- <i>j</i> ⁱⁱ ,
August	♀ <i>j</i> ⁱ × ♂ <i>j</i> ⁱ	produced 5 ♂ + 11 ♀, ref. 1972- <i>j</i> ⁱⁱⁱ ,
August	♀ <i>j</i> ⁱⁱ × ♂ <i>j</i> ⁱ	produced 6 ♂ + 5 ♀, ref. 1972- <i>j</i> ^{iv} .

In October no further pairings could be obtained at Redbourn; Dr. Z. Lorković artificially paired *j*ⁱⁱⁱ insects sent to him at Zagreb and the resulting brood went into diapause. In March 1973 their unexpectedly early emergence unfortunately coincided with his absence in hospital, and all the adults perished.

Pieris napi

(1) Brood 1971-*A* was from eggs from a Devon female. Though strictly ssp. *septentrionalis* Verity, for the purposes of the present work this can be regarded as equivalent to ssp. *napi*.

(2) Brood 1972-*f^{vt}* was the F_2 from a crossing of an *acuta restricta* female with a male bred from Eyne valley (Pyr. Or., France). The characters *acuta* and *restricta* (obliterated upperside markings) were originally derived from New Hampshire ssp. *oleracea*.

Females from the above two broods were used in the two successful F_1 hybridizations. In the back-crosses British stock was employed.

HYBRIDIZATION

HYBRID BROOD 1972-*k*

On 5th August two males of 1972-*j^t* were caged with two females of 1971-*A*. Although occasionally sunny, the weather was cool. However, on 7th August a cross-pairing lasting two hours or more took place. Eggs were laid over the next 14 days, the majority on watercress (*Nasturtium*). The last 15 eggs were sent to Dr. Lorković. The hybrid larvae could be fed on all the usual *P. napi* food-plants. Losses at Redbourn in larval, pre-pupal and pupal stages totalled 29, but at Zagreb were relatively heavier. Six male pupae were therefore sent over in mid-September. Emergences at Redbourn were 29 ♂ + 35 ♀, with 23 pupae (sexed as male) lying over. Male expanses ($2 \times$ distance from pin to forewing-apex) ran up to 53 mm, with females very little smaller.

No intra-brood (F_2) pairings could be obtained, though there was warm sunny weather later in September. Attempts to pair with pure *melete* also failed. A *Pieris virginiensis* Edwards \times *napi* hybrid male paired with a 1972-*k* female on 4th October, but no eggs were laid. Dr. Lorković indeed reported (in litt.) that females of this brood were sterile, 'without eggs in the short ovarioles'.

At the end of June 1973 the over-wintering pupae were removed from cold storage, and 18 male emergences took place. Four good males were used in attempting back-crosses to *P. napi*, with limited success (see broods 1973-*z^t*, *z^{tt}*).

HYBRID BROOD 1972-*i*

After *P. melete* ♂*j^t*7 had failed to pair with three *napi* females it was caged at the age of 3 weeks with an *acuta restricta* female of brood 1972-*f^{vt}*. Still no pairing was seen, but 5 days later this female was rejecting the now interested male. This was significant, because *melete* males generally disregarded *napi* females, which nevertheless attended them solicitously. The male was removed, and five batches of eggs brought in over three weeks.

Four eggs failed to hatch. One small larva died by accident, four by disease: five pupae died. In this brood one batch of larvae more than once ate all the watercress provided except the stalks, but in spite of such temporary shortages the adults were appreciably larger than those in 1972-*k*. Both green and whitish pupae were formed, with very little black marking.

The first emergence on 8th October was of a sexual mosaic; the other insects appeared normal. Three females and one male were posted alive to Dr. Lorković. The last adult, a male, eclosed early in November, was the largest of all. The totals were 56 ♂ + 47 ♀, including two pupae dead after colouring: all resembled 1972-*k*.

As the whole of brood 1972-*i* emerged in late autumn, no pairings were attempted. The females were again sterile (Lorković, in litt.).

BROOD 1973- z^i (back-cross to *napi*)

In mid-July 1973 two labelled males of 1972-*k* were placed in an outdoor cage, and three f. *sulphurea* females of British *napi* added next day. On the 14th and 16th July the second male was found paired, probably with the same female. On the 21st, the first male and one of the other females were dead; there were 7 eggs on *Raphanus* and *Hesperis*. No more appeared, though the paired female lived a few more days.

Three larvae hatched; the other eggs were infertile or (in one case) dead. The three pupae were green, bone-coloured and intermediate. Two females emerged at the end of August; the bone pupa (male) seemed to be over-wintering, but unexpectedly eclosed on 28th October. It was of *napi* phenotype, rather of 'spring' form, but its ultra-short diapause negated a pure *napi* constitution.

BROOD 1973- z^{ii} (back-cross to *napi*)

Another two distinguishable *k* males were similarly caged with two females bred from Eynne valley. Eleven days later one of the males was dead, the other paired with one of the females, but the eggs subsequently laid did not hatch.

The same *k* male six days later paired (within two hours) with a newly introduced female of Herts. origin. After a week there were 7 eggs but the total before the female died was only 13; it might have been higher if an intruding earwig had been detected earlier.

At least 8 eggs failed to hatch, though two of these were very near to hatching. Three pupae were obtained. A female with *melete*-like upperside and a male eclosed in mid-September and a green female pupa failed to survive the winter.

SECOND BACK-CROSS TO *napi*

Three attempts were made, using ♀ z^i2 , ♀ $z^{ii}1$ and ♂ $z^{ii}2$. All failed. The ♀ z^i2 never paired, ♀ $z^{ii}1$ paired with a *sulphurea* heterozygote male and subsequently rejected advances, but laid only 6 eggs, all infertile. The ♂ $z^{ii}2$, caged with 4 English females, showed little interest in them and their few eggs were all infertile.

KARYOLOGY

Dr. Lorković made an intensive investigation of the number and behaviour of the chromosomes in our *Pieris melete* and in the F_1 hybrids, and his detailed report will appear separately (Lorković, in press). It will be sufficient to quote here, with permission, the following most important results: his paper should be consulted for its careful assessment of the significance of meiotic disturbance in hybrids generally.

P. melete

Two specimens gave $n=26+1$ small supernumerary. (Maeki (1953) reported $n=27, 28, 29, 30, 31$ for specimens from Hokkaido, the higher numbers being due to the presence of 1-4 minute supernumeraries.)

P. napi × *melete* F_1 HYBRIDS

Spermatogenesis of three specimens showed (1) 28-30, (2) 31, 34, 36, 39, (3) 37 chromosomes in irregular metaphase plates, comprising bivalents and many univalents.

This represents a very great disturbance of chromosome pairing; in contrast F_1 hybrids *bryoniae* Ochseneimer × *napi* show normal or almost normal pairing, and *virginiensis* × *napi* presents no disturbance at all, 5 individuals having $n=25$ as in *napi* or $n=25+1$ supernumerary as in *virginiensis*. Now *virginiensis* × *napi*

females are extremely weak, though their brothers produce back-cross broods. Thus even a normal pairing of chromosomes does not guarantee conspecificity.

Thus unexpectedly great genetic difference exists between *melete* and *napi*, similar rather to that between *rapae* L. and *mannii* Mayer, whose hybrid males are almost incapable of producing back-crosses. Natural gene-flow between *melete* and *napi* in recent times may probably be ruled out.

DISCUSSION

Pieris melete

The earlier stages will not be described here in detail. The larvae, like those of *P. (n.) oleracea*, lack the bright yellow rings which encircle the spiracles in *P. napi* and *P. bryoniae*. Black tubercles and hairs are prominent on the mature larvae. Brood 1972-*j*^{iv} contained several larvae which were olive-green, instead of the usual bright green; this may or may not represent a regular larval polymorphism.

Measurements, which will not be quoted here, were made to establish the pupal shape in both *melete* and the F_1 hybrids. The pupae generally resemble those of European *napi* rather than American *oleracea*, but they have slighter black markings. The non-green pupae are whiter than in most *napi* subspecies.

The melanic markings of the non-diapause adults are much heavier than in *P. napi napi*, especially in the female; there is a characteristic tendency for markings to run together. In this sex, too, a purple shimmer can be seen on the wings in an oblique light—a phenomenon long ago noted in *bryoniae* females (Müller & Kautz, 1939: 132, 148). On the underside of both sexes the forewing discal cell is extensively invaded by black scales, an appearance which must be rare in *napi*. Both sexes lack the lemon-yellow (sepiapterin) colour found under the hindwings of ssp. *napi* and *bryoniae*; the males carry a small amount of the ochre colour which in *bryoniae* is limited to the female; the females carry more. A rather similar situation, it may be recalled, is found in *P. virginiensis*. The hindwing vein-marking is narrow (*acuta*) and in the non-diapause emergence is not conspicuous (as it is in the over-wintering generation).

Although the upperside ground-colour of the female is sometimes nearly as white as that of the male, the picture in ultra-violet light is very different. The male is now black (as are those of *P. napi* and *bryoniae*), but the female reflects enough UV to appear white on a photograph, as do the ochreous females of *bryoniae*. It is possible that the absence of this UV reflectance in *napi* females is in part responsible for the lack of interest of *melete* males in them, though in the proximity enforced by cages a scent-discrepancy may be more important. A similar case is that of the Colorado *P. (n.) macdunnoughii* Remington, whose nearly white female appears even 'whiter' in UV. Experiments to be reported elsewhere indicate that in these cases the differences relate to the absorption of UV light by leucopterin and to structural-reflection.

The antenna-length of non-diapause *melete* (11 males, 13 females) was compared to the forewing-length measured from the centre of the thorax. The average ratios were 0.396, 0.387, quite close to the figure 0.395 reported earlier (1971) for 'summer' *oleracea*, and significantly lower than the 'European' ratios, all close to 0.44–0.45.

HYBRID BROODS, F_1

In both broods males outnumbered females, but not greatly, and the females though sterile were normal in appearance. The visible disturbance was thus less than in the cross *P. virginiensis* × European *P. napi* (Bowden, 1972). The sterile

females could be paired and three pairings of over-wintered males with *napi* were seen.

The melanic markings rather followed *melete*, the males for example having a weak second discal spot; however, they were less confluent and it was possible to match the upperside markings of the hybrid females fairly well among heavily marked *P. napi britannica* Verity. The purple shimmer seen on *melete* females was less conspicuous in the hybrids. The forewing-underside disc melanization resembled that in *melete*, though it was not always developed, and the hindwing veining was acuta in all, suggesting that the gene responsible in *melete* is dominant, as expected.

The underside yellow presented an apparent anomaly: it followed the *napi* phenotype. Thus, though *melete* has a *subtalba*-like gene fixed, the *napi* lemon-yellow seems to be dominant—the reverse of the situation in ssp. *neobryoniae* Sheljuzhko and in *virginiensis* × *napi* hybrids.

In UV light the hybrids were intermediate between the parent stocks: the female upperside reflected UV light, but not as strongly as female *melete*.

The ratio of antenna-length to forewing-length was estimated for 5 ♂ + 6 ♀ of 1972-*k* and for 7 ♂ + 7 ♀ of 1972-*i*—0.430, 0.422; 0.422, 0.418. It thus departed little from 0.42 and so fell midway between the ratios for the parent species. Intermediate ratios have been found for hybrids in other cases (Bowden, 1971).

HYBRID BROODS, BACK-CROSS TO *napi*

The five individuals eclosed were as follows (some examined only after caging):
♀z¹1, nearly white upperside with heavy markings, though near *napi*, underside forewing cell dusted black, veining possibly acuta.

♀z²2, pale ochre upperside with *melete*-type markings and cell-dusting, veining probably not acuta.

♂z³3, white, not certainly distinguishable from *napi* (near 'spring' form but with rather triangular spot) but not unlike the F₁ ♂i5, cell not dusted, definitely not acuta.

♀z¹¹1, white with *melete*-type markings and cell-dusting, probably not acuta.

♂z¹¹2, white, marking tending to *melete* (forewing discal spot joined to margin), cell dusted, acuta veining of reduced extent.

The above results, taken with those for the F₁, accord with almost complete dominance and independent assortment of *melete* marking-characters.

SUMMARY

Pieris melete melete has been bred, and hybridized with European *P. napi*. *P. m. melete* lacks lemon-yellow pigment, but ochre-yellow is not confined to the female. Moreover, the lack of lemon-yellow is not dominant to *napi* wild-type pigmentation, as it is in *bryoniae* f. *subtalba* and in *P. virginiensis*. The melanic markings of the F₁ hybrids follow those of *melete*, but are generally less confluent.

The *melete* female wings, even when nearly as white as in the male, show a purple sheen and also reflect UV strongly—characters associated in European *Pieris* particularly with ochreous wings. The female F₁ hybrids also reflect the UV, though less strongly.

The acuta underside veining of *P. melete*, like that of *P. (n.) oleracea*, is dominant in *napi* hybrids.

P. melete has relatively short antennae, like *oleracea*, and those of *napi* × *melete* hybrids are intermediate.

Even in confinement *P. melete* males almost disregard *P. napi* females, which however attend these males closely. Two fertile cross-pairings nevertheless gave

large broods in which the sex-ratio was near 1:1 and both sexes appeared strong and healthy. There was only one sex-mosaic. No F_2 pairings were obtained, but two very small back-cross broods resulted from pairings of F_1 hybrid males with *napi* females. F_1 females were sterile.

Chromosome pairing in the F_1 hybrids is greatly disturbed, irregular metaphase plates showing 28–37 bivalents plus univalents (cf. $n=25$ and 27 in the parent species). Such a finding is characteristic of hybrids between full species, not 'semi-species'. Thus all the results reported here agree completely with the accepted opinion of the status of *P. melete melete*.

ACKNOWLEDGEMENTS

It will be clear that this paper owes much of its value to the associated karyological work of Dr. Z. Lorković. I am indebted also to Mr. T. Takakura, the late Mr. J. L. Atkinson, Mr. S. A. Hessel and Dr. H. Descimon for the provision of material.

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**CHETOSTOMA CURVINERVE RONDANI, 1856
(DIPTERA; TRYPETIDAE): AT A FIELD MEETING
AND ITS PLACE ON THE BRITISH LIST.**

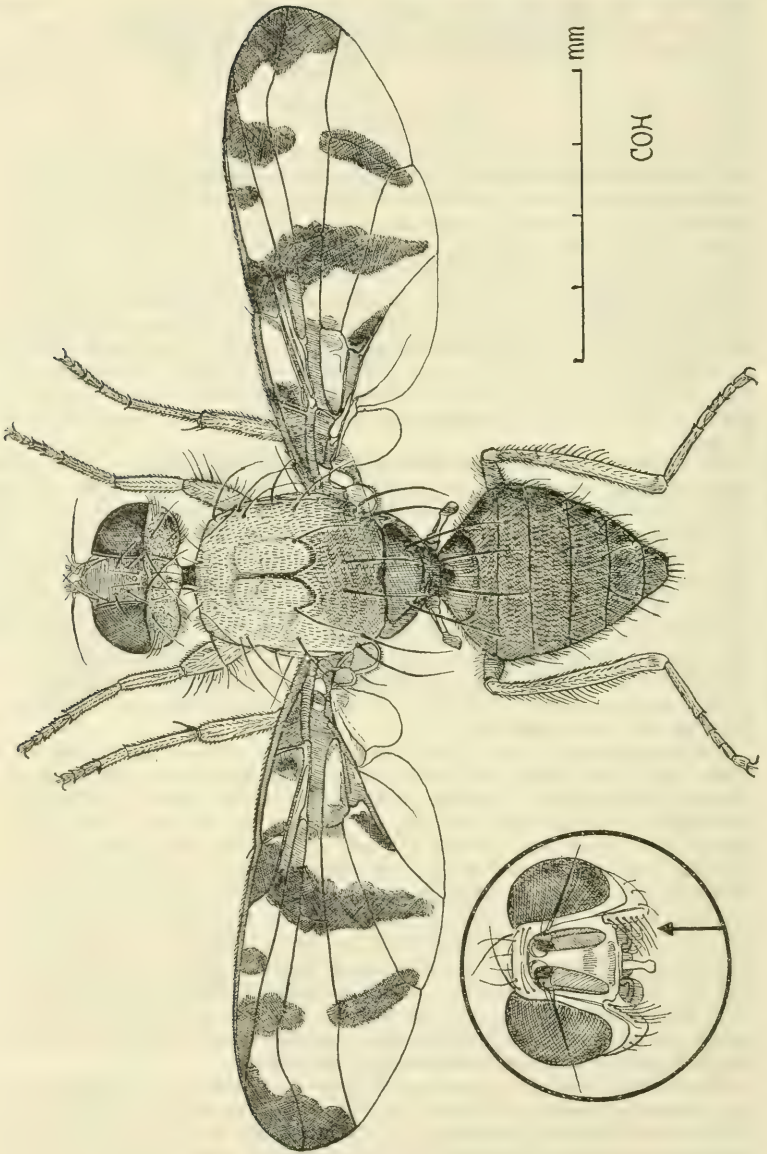
by ALAN E. STUBBS

The Hawkhurst Court Green field meeting on 12.v. 1973, led by Mr. E. H. Wild, proved a most interesting one. The venue being the natural woodland of the renowned Mens and the Cut, Sussex, it was perhaps fate that the meeting should start in the formal grounds of a school. Thanks to early reconnaissance by Mr. Wild and Miss Jane Marshall, most commendably oriented towards the needs of dipterists, collecting began in a gully at the bottom of the ornamental lawns. Immediately on coming out from this gully, back onto the shrub-fringed lawn, my attention, was drawn to a strange trypetid fly sunning on the leaf of a bush—it was almost instantaneously in the net. One is then faced with the anticlimax of knowing that the remainder of the day's efforts will pale by comparison and there is the frustration of seeing a whole day out before reference books can be consulted. Needless to say another of the prized flies could not be found.

The fly, a female, was handsomely marked with an orange body and bold brown patterned wings. There are, however, several trypetid flies of rather similar appearance, but they would be unlikely to occur so early in the year. This one proved to be *Chetostoma curvinerve* which is not on the Kloet and Hincks Check List (1945). It was thus rather frustrating to find a male specimen in the British Museum, taken by Col. Yerbury at Bickleigh, South Devon, 1.iv. 1893. Presumably this specimen was known to Collin, since in his 1947 key to British genera he includes *Chetostoma*, yet the species is not represented in his collection which is now housed at the Hope Department, Oxford. The curious thing is that in his discussion of the species, under the name *giraudi* Frauenfeld, he makes not the slightest comment about the inclusion of the genus in his key, despite its absence from the then recent check list.

The species seems to be curiously elusive on the Continent too. Collin has a single male in his Palaearctic Collection 'ex Coll. Bigot' and locality simply 'Europe' and the British Museum has one from France. Hendel (1927), in his monograph on Palaearctic Trypetids, merely cites the distribution as 'Italien, fraglich auch Wien (bot. garten)' [Italian, questionably also Vienna (botanic garden)]. It is the last point which is so intriguing since my specimen was also taken in a sort of botanic garden, indeed one wonders whether this is a genuine European species at all. In retrospect perhaps more attention should have been paid to the bush at Wisborough, but at the time it looked such a totally alien foodplant for a Trypetid that the occurrence of the fly on that particular evergreen bush was dismissed as incidental, which view I still hold, there having been numerous other introduced plants in the vicinity. It would seem that the fly must remain one of mystery, its foodplant and ecology unknown, but one may note that is close relatives are all leafminers of Compositae.

Even the name has its own problems. *Chetostoma curvinerve* was described as a new genus and species by Rondani in 1856. It is thus surprising that Hendel (1927) in his Palaearctic monograph on Trypetids came to use the name *Chetostoma giraudi* Frauenfeld 1864 for the single European species in the genus, with *curvinervis* Rondani 1869 as a synonym, thus ignoring the original description. Perhaps it was through following Hendel that Collin in 1947 used the Frauenfeld version of the name, citing the date of Rondani's name as 1870, though curiously



Chetostoma curvinerve Rondani

his collection has a space for *curvinervis* Rondani. Stone (1965), in the North American catalogue, adopts Rondani's 1856 names and accepts the synonymy of the Frauenfeld description, so the interpretation of this recent check list is adopted—especially having checked the original papers embroiled in this confusion.

Whatever the problems, to the dipterist the fly is a magnificent one and no description could adequately substitute for the excellent illustration which Mr. C. O. Hammond has so generously prepared. The reason for the generic name is only too clear, the line of bristles around the mouth, rather more strongly developed in the male, makes the genus with its single European species quite distinct from any Trypetids of similar general wing pattern and colour.

Apparently the lepidopterists and colopterists did not have such an exciting day, but let us be thankful that some know a good spot for Diptera when they see it. My thanks are also passed to Mr. E. Taylor for checking Collin's Collection and Messrs. B. Cogan and P. J. Chandler for discussion.

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FIELD MEETINGS

BOLDRE, HANTS—16th March 1974

Leaders: Mr. & Mrs. R. W. WATSON

Some fifteen members made the journey to the New Forest on a beautiful spring day to view the Watson Collection. After coffee, we were soon busy browsing in the cabinet-lined room with its fine view over the Forest. Of special interest was the fine series of *Tyria jacobaeae* L. bred over many years. The varieties of *Arctia caja* L. were also very striking. After a pleasant morning of peering and chatting, we sat down to a magnificent lunch. In the afternoon we were taken to see the larvarium and then returned to the collection until tea.

This was a most enjoyable day and our thanks are due to all the Watson family for their splendid hospitality.

INGLESTONE COMMON, WICKWAR, GLOS.—11th May 1974

Leader: Mr. J. NEWTON

After several weeks of drought conditions in this part of the country, heavy rainfall occurred throughout the night of 10th May, and the following morning was cloudy with showers and intermittent sunshine. However, ten members and

friends arrived from as far afield as Birmingham, Evesham, Bristol and Trowbridge. During the day most of the time was given to larva hunting and those found included *Hydriomena furcata* Thun., *Operophtera brumata* L., *Psyche casta* Pallas and *Nola cucullatella* L.

After sunset, the party was divided into four groups distributed over the area, each with a mercury-vapour light. At first the conditions appeared favourable, but by 11.30 p.m. the sky cleared and the temperature fell, resulting in a complete absence of insect life on the wing. 26 species of Lepidoptera were recorded, including: *Clostera curtula* L., *Pheosia tremula* Clerck, *P. gnoma* F., *Peridea anceps* Goeze, *Ligdia adustata* D. & S., *Menophra abruptaria* Thun., *Plagodis dolabraria* L., *Cabera exanthemata* Scop., *Scoliopteryx libatrix* L., *Eligmodonta zigzag* L. and *Pterostoma palpina* Clerck.

FARNINGHAM, KENT—18th May 1974

Leader: Mr. A. E. STUBBS

The meeting was held jointly with Kent Field Club and the Crane-fly Recording Scheme under the title 'Crane-flies and other Diptera'. A party of eight assembled at Farningham Road Station on a warm sunny day. Records of Diptera and other insects were made on a tetrad basis (2 × 2 km squares) for the Kent Biological Archives at Maidstone Museum—only a selection of records is given here.

The morning was spent by the River Darent collecting in wooded and open areas along the river bank south of the railway. Whilst some species of Diptera were abundant, notably *Empis trigramme* Mg., and a reasonable range of families were found, the variety of flies was rather poor. Hawthorn, Cow Parsley and Buttercup provided a good show of flowers but there were few insect visitors. Crane-flies were surprisingly scarce and the species list was as follows:- *Tipula lateralis* Mg., *T. oleracea* L., *Limonia tripunctata* (F.), *L. chorea* (Mg.), *Limnophila ferruginea* (Mg.), *Cheilotrichia flava* (Schumn.), *Erioptera lutea* Mg. var. *taenionota* Mg., *E. stictica* (Mg.), *E. trivialis* Mg., and *Molophilus griseus* (Mg.). The most productive area was marshy ground with *Glyceria* under Willow. Other Diptera included an *Otitus guttata* (Mg.) in a strip of elm wood. By chance Mr. A. Pont collected along the River on an independent visit—he found *Tipula couckeii* Ton., new to Kent.

In the afternoon attention was paid to Farningham Wood. In the lane to the east of the wood were found *Empis femorata* F. and *Dioctria rufipes*. (Deg.). At the wooded summit of the hill, around some old gravel pits, Mycetophilids were abundant but Diptera were otherwise poor. The crane-flies comprised *Limonia nubeculosa* Mg., *Cheilotrichia cinerascens* (Mg.) and *Sylvicola cineta* (F.). The southern slopes of the wood were rather more lush but Diptera were still scarce. Here the crane-flies were *Limonia nubeculosa*, Mg., *L. flavipes* (F.) and *Ula crassicauda* whilst other Diptera included *Clusia flava* (Mg.), *Pleisioclythia dorsalis* Mg. and *Loxocera sylvatica* Mg. The latter is worth comment. It was found in abundance on *Luzula sylvatica* (Hudson) Gaudin at one spot along a ride. The family *Psilidae* is associated with plants and some *Loxocera* are known to be found on *Juncus*. *Luzula* belongs to the Juncaceae so there seems good reason to assume that *Loxocera sylvatica* is directly associated with *Luzula sylvatica* (the correlation of specific names is coincidental). In advancing this interpretation Mr. P. J. Chandler mentioned that he has found the fly and plant closely associated in several localities in Ireland and he felt that this supposedly rare fly may in fact be as widespread as the *Luzula*. Whilst not challenging the

plant host interpretation, the leader has made a point of sweeping *Luzula sylvatica* in many localities in Britain in view of the plant being a good indicator of productive cranefly terrain but he had previously seen only one specimen of the fly. The fly was clearly very localized along the ride, even though the plant host was more dispersed, so one may infer that the insect is a very fussy one. On the basis of present knowledge this is a very good record for South-east England since Collin (1944, *Ent. mon. Mag.*, **80**: 214-226) only records it from Devon, Cornwall and Scotland and our own previous records support a western distribution.

OXFORD, 25/26th May 1974

Leaders: Professor G. C. VARLEY, C. RIVERS, G. PRIOR

This meeting was in most respects similar to the very successful week-end meeting held at Oxford in 1972. This year the meeting commenced at 10.30 a.m. on Saturday, 25th May at the Oxford University Museum, Parks Rd. The members were again welcomed by Professor Varley and his staff and shown the historic Hope Department of Entomology. Seventeen people attended, some of whom were local entomologists invited by the Society. Members availed themselves of the opportunity to see the fine collections and also had many of their queries resolved by the Professor and his staff.

The party then adjourned to the White Hart, Wytham, for lunch and afterwards to the Oxford University Field Station where Mr. C. Rivers showed the members the experimental work being done there. Not only were those present able to hear some of the results of the work being carried on there but Mr. Rivers was able to give practical help and advice on the breeding and rearing of insects.

In the evening those of the members remaining in Oxford attended a joint meeting with the Oxford University Entomological Society at Jesus College. On Sunday morning the party reassembled at Wytham when Professor Varley led a field meeting in Wytham Woods. Some eighteen members attended. The weather was excellent and though nothing rare or unusual was seen the spring butterflies were out in good numbers. The thanks of the Society are due to Professor Varley and his staff and Mr. C. Rivers for making this a very enjoyable week-end.

HAWKHURST COURT, WISBOROUGH GREEN, SUSSEX
1st June 1974

Leader: Mr. P. J. RENSHAW

Six members met on a pleasant sunny day on the Society's second visit to Hawkhurst Court School set in its very attractive grounds. During the day nine species of butterflies were noted and four species of day-flying moths. The most notable of the moths was *Panemeria tenebrata* Scop.

Five members had travelled down the previous night and placed lights at various points around the ground, some static and some from generators. In all 78 species of macros were recorded, the best probably being *Acronicta alni* L. in mint condition.

Thanks are again due to Mr. Pickering for making this visit possible and to the headmaster of the school, for his kind hospitality both for allowing the lights at night and for the very pleasant tea which he had laid on for those there.

PEWLEY DOWN, GUILDFORD, SURREY—8th June 1974

Leader: Mr. R. F. BRETHERTON

The leader is a notorious Jonah for weather, and this occasion was no exception. After several cold days rain began in the night and continued until after the meeting was due to begin. Nevertheless one member joined the leader at the entrance to Pewley Down at 10.45 and a second came later. After a final shower, some gleams of half sunshine made it possible to find and to photograph the Small Blue (*Cupido minimus* Fuessly), which was a principal object of the meeting, in good numbers around its larval foodplant, the kidney vetch (*Anthyllis vulneraria* L.). Only about a dozen commoner species of Lepidoptera were seen including *Maniola jurtina* L., *Coenonympha pamphilus* L., *Polyommatus icarus* Rott., *Ochlodes venata* Bremer & Grey, *Camptogramma bilineata* L., *Semiothisa clathrata* L., *Crambus pratellus* L., *Homocosoma sinuella* F., *Pseudargyrotoxa convagana* F., *Eucosma fulvana* Steph. A freshly emerged specimen of *Deilephila porcellus* L. was found and many glow worm larvae were seen.

The party adjourned to the leader's house at Bramley for lunch. In the afternoon two members went on to Puttenham Common and Old Woking but, in inclement weather, nothing of note was recorded.

WOOLHOPE DOME, HEREFORDSHIRE—15th June 1974

Leader: Dr. M. W. HARPER

Twelve members assembled at Ledbury and the party then proceeded to Haugh Wood in the Woolhope Dome area. This wood has been extensively reafforested by the Forestry Commission, but it covers a considerable area and there is still much of interest to the entomologist. The weather was very warm and sultry. *Leptidea sinapis* L. was fairly numerous in the wide rides and many pairs were observed during their intricate courtship display. Columbine (*Aquilegia vulgaris* L.) and lily of the valley (*Convallaria majalis* L.) were examples of the more local flora that were seen in flower. A fresh male of *Angerona prunaria* L. was disturbed, a new record for this local species in the area. Of the Tortricidae, the local *Eucosmomorpha albersana* Hübn. was not uncommon in cleared areas of the wood, while *Ancylis diminutana* Haw., *A. obtusana* Haw., *A. mitterbacheriana* D. & S. and *A. lactana* F. were all observed. Larvae and pupae of *Acleris schalleriana* L. were found on *Viburnum opulus* L. and these produced undersized moths in July, possibly due to the severe defoliation of the foodplant by a small beetle, probably *Galerucella viburni* (Pk.).

Of the numerous species of Tineinae that were found, I am indebted to Col. A. M. Emmet, who was present at the meeting, for their identification. Of the more interesting species, special mention can be made of the following: *Cosmopterix drurella* F., *Lampronia praelatella* D. & S. (imagines were found in the vicinity of its foodplant *Fragaria vesca* L.), *Phyllonorycter roboris* Zell. and *P. distentella* Zell. (these two were disturbed from oak).

After a pleasant evening meal, the party reassembled for a night operation in the wood. Despite thundery conditions, the rain held off until after midnight. Among the more interesting species that appeared were the following: *Deilephila porcellus* L., *Harpyia furcula* Clerck, *Bena prasinana* L., *Cosymbia annulata* Schulze, *C. linearia* Hübn. and *Eupithecia plumbeolata* Haw. *E. albersana* appeared again at light and a single *Pseudococcyx posticana* Zett. was seen.

On the following day, the rain that had been threatening washed out any hopes of resuming the field meeting. However, the variety of Lepidoptera seen on the previous day, 103 species were recorded, compensated for this disappointment.

WHIXALL MOSS, STAFFORDSHIRE—22nd/23rd June 1974

Leader: Mr. P. N. CROW

Eleven members of the Lancashire and Cheshire Entomological Society and two members of the British Entomological and Natural History Society attended for the day collecting. One of the members of the latter Society was joined by two more when he stayed on to work light that evening. The weather was sunny during the day, with a light cool breeze, and most of the insects had to be knocked up. The night was cool and clear. The only records sent in have been those of Lepidoptera seen during the day: *Pararge aegeria* L., *Lasiommata megera* L., *Maniola jurtina* L., *Coenonympha pamphilus* L., *C. tullia davus* F., *Boloria selene* D. & S., *Aglais urticae* L., *Lycaena phlaeas* L., *Callophrys rubi* L., *Pieris napi* L., *Anthocaris cardamines* L., *Gonepteryx rhamni* L., *Erynnis tages* L., *Ochlodes venata* Brem. & Grey, *Parasemia plantaginis* L., *Ematurga atomaria* L. and *Perconia strigillaria* Hübn.

MEATHOP MOSS AND BLACK TOM'S LANE, WITHERSLACK, WESTMORLAND—29/30th June 1974

Leaders: Dr. N. L. BIRKETT and Mr. J. M. CHALMERS-HUNT

Excellent weather characterized this week-end meeting helping to justify the lengthy journeys made by some members in order to attend. The party met at the well-known Derby Arms Hotel, Witherslack early in the afternoon of 29 June. The party comprised six members of the British Entomological and Natural History Society, two members of the Lancashire and Cheshire Entomological Society and a botanical visitor from the Kendal Natural History Society, Mr. G. Sircom (one of whose ancestors was a well-known early nineteenth century entomologist). The party proceeded to the Meathop Moss Nature Reserve. This Reserve is now administered by the Cumbria Naturalists' Trust and we were most grateful to Prof. H. W. Miles, Chairman of the Management Committee, for permission to visit the area. As usual most members of the party were lepidopterists but some attention was given to the other Orders, as for instance the Coleoptera and Diptera—and be it noted the Diptera gave considerable attention to the party!

Meathop Moss is part of the fast-disappearing raised bog habitats formerly so widespread around Morecambe Bay. The entomological potential of these areas was first realized early last century and, of course, continues to the present day. Unfortunately due to changing land usage, associated especially with a falling water-table resulting from agricultural drainage of surrounding areas, the 'mosses', as they are locally known, are fast diminishing in extent and in consequence their specialized insect fauna must also be suffering reduction. At least one butterfly, *Plebejus argus masseyi* Tutt, has become extinct, so far as is known, in the last 25 to 30 years. This extinction is believed to have been caused by a mixture of climatic and environmental changes rather than to overzealous collecting by lepidopterists.

Many of the species for which the mosses are renowned were present in good numbers on the day of the visit. *Coenonympha tullia davus* F. was getting over

and the females present were distinctly *passé*. Other Lepidoptera noted which could be considered fairly typical of the biotype were: *Diacrisia sammio* L. (this species was also noted, perhaps rather curiously, on the totally different terrain of the neighbouring carboniferous limestone hills on the following day!), *Cybosia mesomella* L., *Idaea muricata* Hufn., *Scopula ternata* Schrank, *Perconia strigillaria* Hübn., *Lasiocampa quercus callunae* Palmer, as well as numerous more generally distributed species. Crambidae were well represented by *Crambus pascuella* L., *C. pratella* L., *Catoptria margaritella* D. & S., and *Chrysoteuchia culmella* L. Among the rather few other 'micros' noted were *Pleurota bicostella* Clerck, *Syndemis musculana* Hübn. and *Micropteryx aureatella* Scop.

Tabanids were prominent among the Diptera noted. As usual *Haematopota pluvialis* (L.) made its presence felt and the less frequent *H. crassicornis* Wahlberg appeared to be commoner than usual. One or two of the larger *Tabanus* spp. were taken but are not yet identified for recording.

Dr. MacNulty spent much time sweeping for Coleoptera and no doubt his results will be published in due course. Many 'good' beetles occur on Meathop Moss though a definitive list is yet to be published.

Numerous mercury vapour lamps were in operation on the night of 29/30th June both in Black Tom's Lane and in the village of Witherslack itself. Excellent results were obtained as the night proved to be a good one for insect activity. Something approaching 100 species were recorded either at the sheets or in the traps. Black Tom's Lane, very much a local name for the little track which runs on the junction between typical moss-land on the west and carboniferous limestone with mixed woodland on the east, is so-called after an old stone-breaker who once worked in the little quarry nearby.

A total list of species is beyond the scope of this report but the following are perhaps worthy of note: *Plusia bractea* D. & S., *Craniophora ligustri* D. & S. of a dark facies, *Notodonta dromedarius* L., *Anaplectoides prasina* D. & S., *Abrostola trigemina* Werneberg, *A. triplasia* L., *Peribatoides rhomboidaria* D. & S. and *Hydrelia flammeolaria* Hufn. One male of the uncommon Psychid *Sterrhopteryx fusca* (Haw.) (= *hirsutella* sensu Hübn.) was also taken.

Sunday, 30th June, was a glorious sunny day and the party ascended Strickland Hill. This is a carboniferous limestone hill of some 400 ft. overlooking the village of Witherslack and the hills of Lake land. Butterflies were very numerous and included *Argynnis aglaja* L., *A. adippe* D. & S., *Coenonympha pamphilus* L., *Maniola jurtina insularis* Thomson, *Aricia artaxerxes* F., *Polyommatus icarus* Rott. and sundry 'whites'. It was most refreshing and pleasant to see such a profusion of butterflies in the bright sunny conditions and it was obvious that the party gave precedence to observation rather than collecting. As previously mentioned it was interesting to note the presence of *D. sammio* in this habitat.

Sundry Diptera, mainly Syrphidae were noted but these await final identification. A female *Lasiopogon cinctus* F. (Dipt., Asilidae) was taken. This is a scarce species in the district. The beetle *Oedemera nobilis* (Scop.) was common on the flower heads of *Hieracium* sp.

The main party departed soon after 2 p.m. in view of their long journey. Dr. Birkett visited the woods in the direction of Witherslack Hall for a short time, mainly in search of Diptera. Insects were not abundant in the area but some, specimens of *Beris clavipes* (L.), (Dipt., Stratiomyidae) were obtained and also a fine male *Macrocera angulata* Meigen (Dipt., Mycetophilidae) was taken. This is a striking small fly with elongated antennae and is decidedly a rarity, so far as is known, in this district.

On the Sunday that the main party visited Strickland Hill, two members

visited the Honister Pass area in search of *Erebia epiphron mnemon* Haw. Only one very worn female was found and it was obvious that the species had gone over by this date.

GRAYS CHALK PIT, ESSEX—14th July 1974

Leader: Mr. R. TOMLINSON

This was a joint meeting with the Thurrock Natural History Society to investigate 50 acres of disused chalk pit held by the Essex Naturalists' Trust under licence from the Associated Portland Cement Co. It was hoped that microlepidopterists from the Society would attend to examine this fine area. However, only six members of the Thurrock group met the leader.

It was a day of some sun, a little cloud and rain. Most of the Thurrock members left for lunch and did not return afterwards. Fortunately my young friend, the up-and-coming dipterist, Graham Glombek stayed with me until 5.00 p.m. He captured between 30 and 40 species of Diptera which have been checked through by Messrs. R. M. Payne and P. J. Chandler. So far, nine of them have been positively identified: *Neurigona quadrifasciata* F., *Dolichopus claviger* Stann., *D. pennatus* Mg., *Scellus notatus* F., *Xanthochlorus tenellus* Wied., *Beris morrisii* Dale, *B. geniculata* Curtis, *Tipula nigra* L. and *Machimimus atricapillus* Fall.

So there were no 'micro' records, but I am told that some of the Diptera records are quite good.

COSFORD MILL, SURREY—27th July 1974

Leader: Mr. P. J. BAKER

Four members and one guest attended this meeting at what is now a well known venue. The day started somewhat cloudy and windy, but there were warm sunny periods in the afternoon. Around the Mill butterflies were scarce with mainly one or two each of the following being noted: *Pieris napi* L., *Pararge aegeria* L., *Lasiommata megera* L., *Maniola jurtina* L., *Pyronia tithonus* L., *Thymelicus sylvestris* Poda and *Ochlodes venata* Brem. & Grey. Later in the afternoon, the increasing sunshine encouraged three *Polygonia c-album* L. to partake of the facilities offered by a compost heap. Larvae of *Eupithecia pulchellata* Steph. and *E. lariciata* Freyer were found on their respective foodplants and in the marshy area several imagines of *Hypena proboscidalis* L., *Hydrelia flammeolaria* Hufn. and *Cabera pusaria* L. were flushed.

In the afternoon, three of the party temporarily adjourned to Thursley Common. Here butterflies were more plentiful; *Hipparchia semele* L., *Coenonympha pamphilus* L., *Aphantopus hyperantus* L., a single *Lycaena phlaeas* L. and quite a few *Plebejus argus* L. were seen. Imagines of *Pseudoterpna pruinata* Hufn., *Idaea straminata* Borkh. and *Selidosema brunnearia* Vill. were flushed. Several imagines of *Anarta myrtili* L. were flying over the heath at the same time as nearly full-fed larvae of this species were found on the heather.

Mr. and Mrs. Loaridge are once more to be thanked for providing an excellent tea which was enjoyed by all.

At night a light was run and the following moths recorded: *Crambus pascuella* L., *Agriphila tristella* D. & S., *Evergestis pallidata* Hufn., *Eurrhyncha hortulata* L., *Pleuroptya ruralis* Scop., *Hypsopygia costalis* F., *Endotricha flammealis* D. & S., *Philudoria potatoria* L., *Hemithea aestivaria* Hübn., *Timandra griseata* Pet., *Ecliptopera silaceata* D. & S., *Camptogramma bilineata* L., *Eulithis pyraliata* D. & S., *Hydriomena furcata* Thunb., *Lomaspilis marginata* L., *Peribatodes rhom-*

boidaria D. & S., *Biston betularia* L., *Euproctis similis* Fuess., *Arctia caja* L., *Eilema lurideola* Zinn., *Noctua pronuba* L., *Lycophotia varia* Vill., *Xestia baja* D. & S., *Melanchnra persicariae* L., *Lacanobia oleracea* L., *Mythimna conigera* D. & S., *Euplexia lucipara* L. and *Apamea monoglypha* Hufn.

PROCEEDINGS

26th SEPTEMBER 1974

The President, Mr. C. MACKECHNIE-JARVIS, in the chair.

The following new members were declared elected: Miss Margaret M. Brooks, Prof. J. A. Owen, Messrs. H. J. Hughes, A. W. Pritchard and M. S. L. Simpson.

EXHIBITS

Dr. B. J. MACNULTY—A specimen of *Volucella zonaria* (Poda) (Dipt., Syrphidae) taken at the end of August 1974 on buddleia in his garden at Waltham Abbey, Essex. He believed that the previous most northerly record was from Leytonstone. In view of their habitat, the larvae feeding in detritus in the nests of *Vespula* spp., he asked whether the imago hibernated or whether the larvae fed up in old nests during the winter, also was the fly double-brooded.

Col. A. M. EMMET—1. The first British specimens of *Ectoedemia erythrogenella* de Joannis (Lep., Nepticulidae), reared in July 1974 from larvae collected in October 1973 at Portland, Dorset and in November 1973 at Benfleet, Essex. The larvae mine the leaves of *Rubus fruticosus* L. agg. and an example was shown to illustrate the crimson-purple discolouration of the leaf which suggested the insect's name. For comparison, specimens were shown of *E. rubivora* Wocke, which feeds on the same foodplant, and of *E. albifasciella* Hein., which feeds on oak but has a similar wing pattern. 2. Living larvae of the Red-necked Footman (*Atolmis rubricollis* L.) (Lep., Arctiidae) from Tresco, Isles of Scilly, collected 19.ix.74. They were feeding on algae growing on the trunks of *Cupressus macrocarpa* Hartw. and were very plentiful; for example, 35 larvae were counted on a single trunk and others were probably present but not detected because of their cryptic colouration.

Mr. D. E. WILSON—A large, unnamed sawfly larva from willow at Wicken Fen, 21.ix.74. It probably belonged to the genus *Cimbex* or *Trichiosoma* (Hym., Cimbicidae).

Mr. A. E. STUBBS—Some interesting insects from suburban Mitcham Common, Surrey: *Xiphydria prolongata* (Geoff.) (Hym., Xiphydriidae), a local sawfly whose larvae bore in the wood of willow, 21.vii.74; *Sargus bipunctatus* Scop. (Dipt., Stratiomyidae), a fly which breeds in cow dung, although the nearest must be some miles away, 22.ix.74; *Erioptera pilipes* F. (Dipt., Tipulidae), a distinctive crane fly, with hairy legs in the male, which was found at the edge of a pond, 22.ix.74. It has an almost ubiquitous world distribution, but is seldom found in this country; *Pilaria scutellata* Staeg. (Dipt., Tipulidae), an uncommon fly taken by a pond, 22.ix.74.

Mr. B. F. SKINNER—Aberrations of British Lepidoptera: *Plebejus argus argus* L. (Lycaenidae), a small female having the black spots on the underside elongated and the left forewing obsolete, from Chobham, Surrey, 10.vii.74; *Luperina testacea* D. & S. (Noctuidae), a dark brown male with obscure wing markings

from Liverton, Devon, 25.viii.74; *Rhodometra sacraria* L. (Geometridae), an obsolete female, being part of an F₂ generation bred from a female from Portland, Dorset, 9.ix.73; *Hylaea fasciaria* L. (Geometridae), a male of the green form *prasinaria* D. & S. from Hamstreet, Kent, 14.ix.74.

COMMUNICATIONS

Mr. G. Prior has seen many specimens of *Vanessa atalanta* L. (Lep., Nymphalidae) flying on the Isle of Wight; many browns and blues were also still present on the downs.

Mr. M. G. Ventom asked why craneflies were so common this year. Mr. Stubbs replied that *Tipula paludosa* Mg. has years when it is locally a pest of grassland and occurs in enormous numbers.

Dr. C. G. M. de Worms remembered seeing a remarkable flight of the Red-necked Footman on the Lizard Peninsula, Cornwall at the end of June 1974. The flight only lasted for twenty minutes, but there were even specimens on the beach. He added that he had heard similar reports from other parts of Cornwall and further east. A female he had collected had laid many ova, but he had failed to breed the species.

Mr. R. F. Bretherton had taken a female *Spaelotis ravida* D. & S. (Lep., Noctuidae) in a trap in a garden in Bromsgrove ten days previously. He believed this to be the first record from Worcestershire this century. Unfortunately it laid no ova before it died and he thought that it had never been bred from the egg. However, Mr. Skinner reported that Mr. G. M. Haggett had bred two this year, one from an ovum and one from a larva.

Mr. E. H. Wild reported enormous numbers of *Coccinella septempunctata* L. (Col., Coccinellidae) on the coast at Southwold, Suffolk in the last three days of July 1974. Others present recalled similar experiences with this and other species of ladybird in the same area.

Mr. E. S. Bradford had found several dipterous pupae in a nest of *Vespula* sp. a few years ago and wondered if they might have been of *V. zonaria*. Mr. G. R. Else reported finding larvae, at all stages, of this species in a nest of *Vespula vulgaris* (L.) (Hym., Vespidae) at Porchester, Dorset in November 1972: the imagines had emerged in June the following year. Dr. D. L. Hawksworth added that the distribution of this fly was discussed in *The Changing Flora and Fauna of Britain* by K. G. V. Smith.

Col. Emmet reported that Mr. D. W. H. Fennell had taken the green form of *H. fasciaria* at Hamstreet on 8.vii.74. Messrs. Bretherton and J. M. Chalmers-Hunt reported purple-grey specimens of this species from Bramley, Surrey and Angus, Scotland respectively, both this year.

Dr. Hawksworth then gave a talk entitled 'The World of Lichens' which he illustrated with slides. This was followed by a discussion, which included ways in which lichenologists and lepidopterists could work together.

10th OCTOBER 1974

The President, Mr. C. MacKechnie Jarvis, in the chair.

EXHIBITS

Mr. C. O. HAMMOND—A male of the very rare Scottish damselfly *Coenagrion hastulatum* (Charpentier) (Odonata, Coenagriidae) taken near Pitlochry, Perthshire, 23.vii.74; and a male of the common *Enallagma cyathigerum* (Charp.)

with the black markings on segment 2 of the abdomen so closely resembling those of the former species as to render confusion in identification, thus making microscopic examination of the anal appendages essential. This variety is not normally met with in England. A specimen with the normal markings was also exhibited.

Col. A. M. EMMET—1. A leaf-mine, believed to be that of *Lyonetia prunifoliella* Hübn. (Lep., Lyonetiidae), on rowan (*Sorbus aucuparia* L.) taken (already vacated) near Anstey, Leics., 27.viii.74. According to Meyrick this species has only been taken at Whittlewood Forest, Northants, but there is also a bred series from Worthing, Sussex, in the Fletcher Collection, Department of Zoology, Cambridge. Anstey is 45 miles from Whittlebury in Whittlewood Forest. The species does not appear to have been recorded from Britain since the end of the nineteenth century or, possibly, the beginning of the twentieth. Meyrick gives the foodplants as blackthorn and birch, but Hering gives also a wide range of Rosaceae, including *Sorbus*. 2. Vacated mines, believed to be those of *Rhynchaenus erythropus* Germar (Col., Curculionidae), taken by Mr. D. W. H. Fennell on holm oak (*Quercus ilex* L.) in the Itchen Valley, Hants., 29.ix.74. Similar mines were found by the exhibitor at Barnstaple, Devon, 13.ix.74 and by Mr. J. M. Chalmers-Hunt in west Cornwall, also in September of this year. Hering gives the distribution of this species as west and south-west Europe, but it does not appear to have been previously recorded from Britain.

Mr. E. C. PELHAM-CLINTON (shown by Col. Emmet)—Leaves of grey poplar (*Populus canescens* (Ait.) Sm.) mined by a species of *Phyllocnistis* (Lep., Phyllocnistidae) new to Britain. The mines were found in the Dover, Kent area, 9.ix.74 and three imagines reared. Col. Emmet visited the same locality on 4.x.74 and thought that by then the mines were almost all vacated, he reared a single adult on 7.x.74. The specific name is not yet certain. Hering (*Bestimmungstabellen der Blattminen von Europa*, 11:808-9) gives two possibilities—*P. labyrinthella* Bjerkander, which feeds mainly on aspen (*Populus tremula* L.) and *P. xenia* Hering, which feeds on white poplar (*Populus alba* L.); he adds, however, that they may well be one and the same species. The mines differ from those of *P. suffusella* Zell., which is found on black poplar (*Populus nigra* L.) and Lombardy poplar, in having a dark line of frass in the centre of the gallery. This is because *labyrinthella* (or *xenia*) consumes some of the parenchyma of the leaf, whereas *suffusella* feeds only on the sap.

Mr. S. N. A. JACOBS—A specimen of *Stenopteryx hirundinis* L. (Dipt., Hippoboscidae) found on a young housemartin which was sitting on a footway in Bromley, Kent, 29.ix.74. He remarked that a parasite of this size on so small a bird would approximate to a fully grown rat making itself at home in a human armpit.

COMMUNICATIONS

Col. Emmet reported that Mr. Scarsdale Brown had also reared specimens of *Ectoedemia erythrogenella* de Joannis this year. Col. Emmet had exhibited this species as new to Britain at the previous meeting.

Mr. D. Stimpson remarked that his cat had brought home a dead swift with at least six of the parasites shown by Mr. Jacobs on it. He said that they were much larger than the exhibited specimen when they had been feeding. The President had found a dying swift on the beach at Selsey, Sussex, which also had these parasites and wondered whether they caused this condition or merely took advantage of it.

Mr. G. B. Else gave a talk entitled, 'Nesting Habits of British Solitary Aculeate Hymenoptera', illustrated with colour slides, and then answered questions on the subject.

24th OCTOBER 1974

A Vice-President, Dr. M. G. MORRIS, in the chair.

The following new members were declared elected: Messrs. J. Brown, P. C. Follett, J. N. Greatorex-Davies and M. J. Grey.

EXHIBITS

Col. A. M. EMMET—Two inch-thick branches of oak containing mines of *Ectoedemia atrifrontella* Staint. (Lep., Nepticulidae) in the bark. They were collected on Snaresbrook Common, Middx., 11.x.74.

These are the first mines of this rare species to be found in Britain. The standard textbooks erroneously describe the larva as mining the bark of *Genista tinctoria* L., in spite of the fact that the few imagines which have been captured have all been taken on or around oaks. The eggs are laid on the green branches of young oak and the larva feeds throughout the winter, making a tortuous gallery. It is probably full-fed about April. Adults have been captured from June till early September. The known range extends from Kent to Wiltshire.

Mr. C. O. HAMMOND—The seventh and eighth specimens of *Callicera spinola* Rondani (Diptera, Syrphidae) to be taken in Britain. Both are females and were taken at Houghton, Norfolk, 22–23.viii.74, feeding at ivy blossom.

Mr. E. H. WILD—An unusual form of *Olethreutes lacumana* D. & S. (Lep., Tortricidae), not represented in the British Museum (Nat. Hist.) collections, taken at Dungeness, Kent, 30.vi.74.

Prof. J. A. OWEN—A male of the rare *Hydroporus longicornis* Sharp (Col., Dytiscidae) from Crowborough, Sussex, 20.x.74.

Mr. R. I. VANE-WRIGHT—An exhibit of spectacular and exotic Tipulidae from the collections of the British Museum (Nat. Hist.).

Dr. C. G. M. DE WORMS—A live specimen of the Dotted Chestnut (*Conistra rubiginea* D. & S.) (Lep., Noctuidae) taken in his light trap at Woking, Surrey. It was one of only four moths taken that night.

COMMUNICATIONS

Col. Emmet said that he had compared the mines, which he believed to be of the weevil *Rhynchaenus erythropus* Germar and had exhibited at the previous meeting, with those in the Hering herbarium and was now certain of the identification. He had also compared the mines of the *Phyllocnistis* species with those in the herbarium. Those of *labyrinthella* were broad, had a narrow line of frass and were on the underside of leaves: those of *xenia* were narrow with a broader line of frass and were on the upperside of leaves. He suspected that those which had been exhibited were of *xenia*. They had been sent for expert opinion.

Replying to a question, Col. Emmet suggested that the best time to find inhabited mines of *atrifrontella* would be April. He added that the literature recommended the sunny side of large oaks on branches between the size of a finger and an arm.

Messrs. A. E. Stubbs and R. I. Vane-Wright gave an illustrated talk entitled 'Craneflies', which was followed by a discussion.

14th NOVEMBER 1974

A Vice-President, Dr. M. G. MORRIS, in the chair.

The following new members were declared elected: Messrs. H. J. Eliston, M. P. Kelly, F. E. Ranson and M. C. Aldridge.

EXHIBITS

Mr. E. H. WILD—Live specimens of the red and black *Endomychus coccineus* (L.) (Col., Endomychidae) found feeding on fungus on living maple trunks at Whitedown, Surrey, late at night, 9.xi.74.

Dr. I. WATKINSON—A tentative list of interesting and rare insects from the Shakespear Cliff area and the area running directly inland from Folkestone, Kent. This had been prepared for the Nature Conservancy which is carrying out a survey on the proposed sites of the Channel Tunnel and marshalling yards.

COMMUNICATIONS

Commenting on the recent Annual Exhibition, Dr. C. G. M. de Worms said that he had had forebodings about its quality because of the poor summer, however there were many good Lepidoptera on view, including British. He and other members mentioned specific exhibits which they had found striking.

Mr. J. M. Chalmers-Hunt thought that the exhibit of clearwings with colour pictures of their habitats by Mr. B. F. Skinner was both exceptional and instructive. Dr. de Worms thought that another instructive exhibit was that of Alpine Lepidoptera grouped by altitude shown by Mr. S. E. Whitebread. Mr. S. N. A. Jacobs thought the same of Col. A. M. Emmet's exhibit of microlepidoptera.

Dr. P. A. Boswell had been especially impressed by Mr. W. A. Vicker's exhibit of colour photographs of British butterflies in the wild. Both Mr. J. A. Heath and Dr. M. G. Morris felt that there was much to be learnt about the behaviour of insects by photographing them. The quality and good value of the refreshments were mentioned by many members.

Mr. R. F. Bretherton was concerned that many exhibits were not well written up, both to explain their purpose and for the report in the *Proceedings*. Mr. G. Prior thought that the exhibitors, themselves, should be better labelled, while Mr. Stubbs thought that this applied to all those present.

Other suggestions for future Exhibitions were made. Mr. Stubbs would like to see an exhibit incorporating all insects added to the British List during the previous year. He also thought that more live material could be shown, although he appreciated that the time of year might make this difficult; and that normal geographical variation of species would also make good exhibits. Mr. Heath would like to see more exhibits like that of Mr. Skinner and also recalled similar exhibits, which included models to show habitat, at this years' Annual Exhibition of the Amateur Entomologists' Society. Dr. P. A. Boswell wondered whether there were other organizations like the Amateur Entomologists' Society which should be invited to the Exhibition, so that members might be made aware of what they had to offer. Mr. D. E. Wilson wondered if subjects other than Lepidoptera were suitable for photographs to be included in the report on the Exhibition.

After further discussion on a wide range of entomological topics, the meeting was ended by an anecdote from Dr. Morris.

The Society's Publications

Back numbers of the Society's Publications still in print are becoming scarce. We regret therefore that we have had to reassess their value and new prices have been agreed. These are as follows:—

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THE STUDY OF WOODLICE: PROGRESS OF THE RECORDING SCHEME

BY PAUL T. HARDING

(Isopod Survey Scheme, c/o Monks Wood Experimental Station,
Abbots Ripton, Huntingdon)

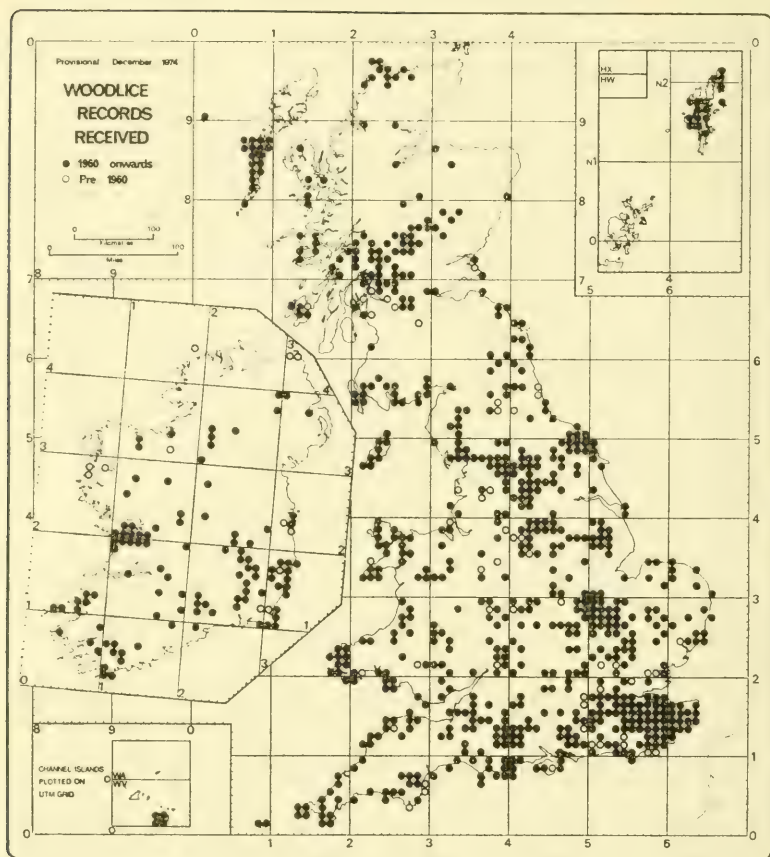
In his paper 'The Study of Woodlice', Sutton (1969) gave notice that the Isopod Survey Scheme had been set up to obtain information about the distribution and habitat preferences of Isopoda in the British Isles. During the last five years there have been considerable developments with the Scheme. A new recording card with detailed habitat classifications for the terrestrial species (Woodlice) and freshwater species (*Asellus* spp) was developed in collaboration with the Myriapod Study Group. This card was produced and printed by the Biological Records Centre of the Institute of Terrestrial Ecology (formerly the Nature Conservancy) in late 1970. A similarly based recording card for Marine species was developed in 1972 and a separate recording scheme has now been set up. Recently published keys to the terrestrial species (in Sutton, 1972) and marine species (Naylor, 1972) facilitate identification, but unfortunately the Freshwater Biological Association 'Key to Malacostraca', which includes *Asellus* spp, is still out of print although a new edition is expected soon.

The purpose of the non-marine Isopoda recording scheme is two fold: to produce distribution maps for all species occurring in the British Isles, and to obtain details of the occurrence of species in habitats and microsites in relation to their geographical distribution. The eventual aims of this systematic recording are as follows (Sutton, 1972):

1. to clarify the *status* of the British species as native, naturalised, or alien;
 2. to show which *habitats* are occupied by which species, as a step towards finding out the factors limiting the range of habitats occupied by each species;
 3. to provide sufficient knowledge of *distribution* so that future changes can be detected and possibly predicted;
 4. to indicate which species are genuinely rare and in need of *conservation*.
- Although these aims apply equally to the terrestrial and the freshwater species, the remainder of this account deals purely with the terrestrial species.

The first phase of recording has been directed mainly to obtaining distribution records, whilst also accumulating habitat data for later use. After five years the end of this first phase is in sight. Records have been obtained from nearly 900 of the 3,850 (approx.) ten kilometre squares covering Britain and Ireland (Map 1). It is hoped that once records have been obtained from circa. 1,000 squares it will be possible to publish, in collaboration with the Biological Records Centre, an atlas of provisional distribution maps.

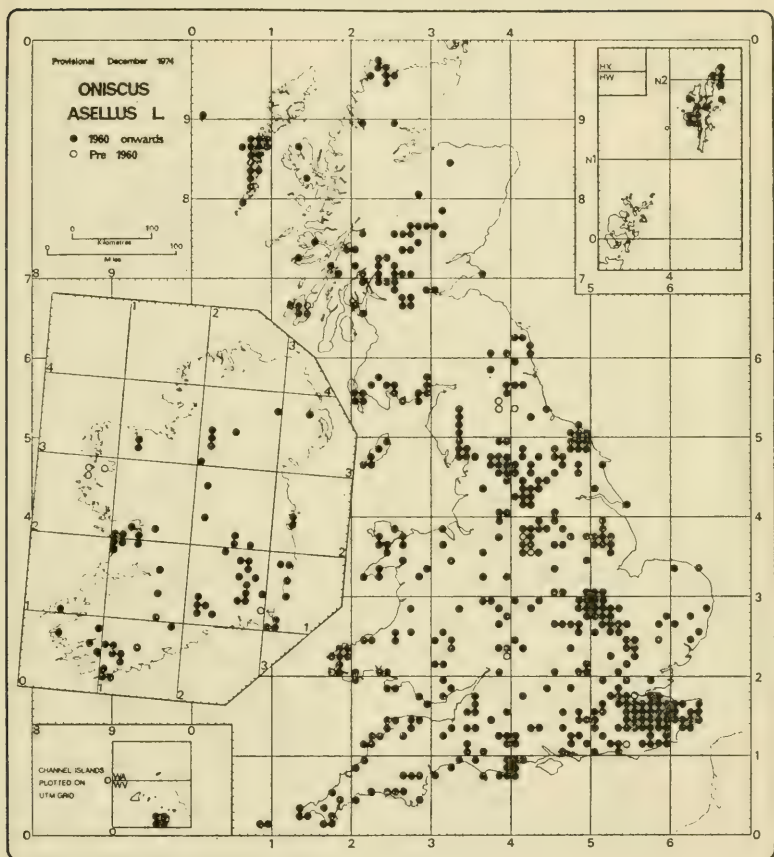
Although the distribution of records largely follows that of recorders and their holidays, distribution patterns are beginning to emerge for some species. *Oniscus asellus* L. (Map 2) is proving to be widespread as was expected, but the distribution of *Armadillidium vulgare* (Lat.) (Map 3) seems to be more narrowly south eastern and coastal than might be



MAP 1. Woodlice records received.

expected. However many more records are needed before proper conclusions can be made.

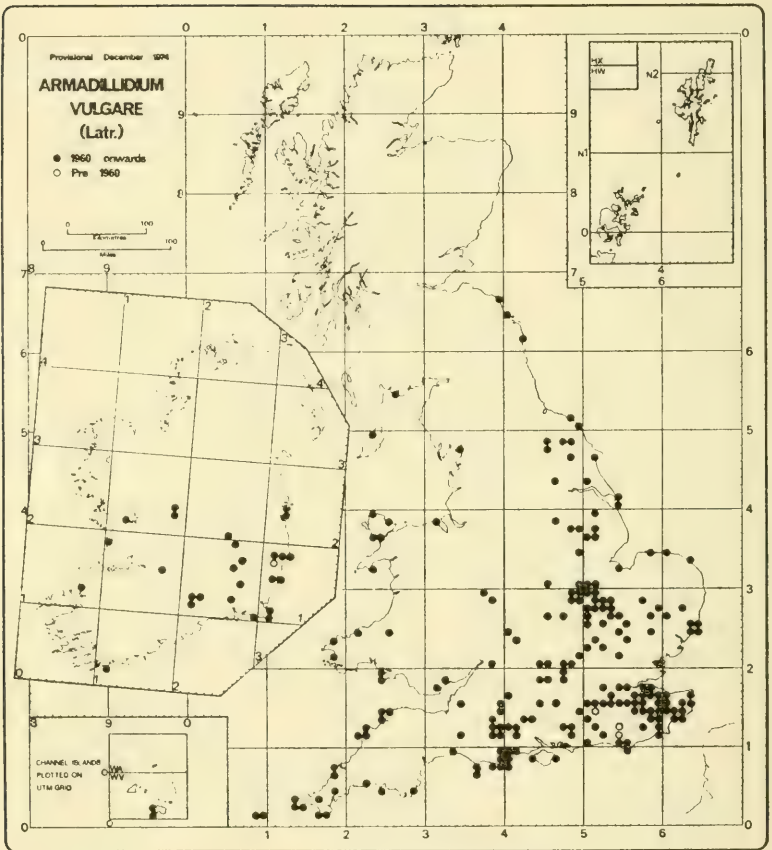
Records are urgently needed from almost every part of Britain and Ireland. To encourage people with no previous experience of the group to participate, the identification of voucher specimens is undertaken by the scheme's organisers. To ensure accuracy in recording all collectors are required to send specimens for confirmation until they have built up a reference collection of material which has been checked and returned by the organisers. Further information, record cards and instructions can be obtained from me at the above address.



MAP 2. Records of *Oniscus asellus* L.

ACKNOWLEDGEMENTS

I am grateful to Dr. S. L. Sutton and to all our recorders for their records and co-operation in the production of the attached maps. Thanks are also due to the Biological Records Centre for data processing.



MAP 3. Records of *Armadillidium vulgare* (Lat.).

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**BREVICORNU SERENUM (WINNERTZ, 1863) (DIPTERA,
MYCETOPHILIDAE) NEW TO THE BRITISH ISLES,
FROM PETT'S WOOD IN SOUTH-EAST LONDON**

BY PETER J. CHANDLER

(Weston Research Laboratories, 644 Bath Road, Taplow,
Maidenhead, Berks.)

A rather small brownish yellow male fungus gnat, which I obtained by sweeping in Pett's Wood, Chislehurst, Kent, a mixed deciduous woodland in the suburbs of south-east London, on 22nd September 1974, did not run down satisfactorily in the keys of Edwards (1925). It was evidently a member of the genus *Brevicornu* Marshall (sensu stricto), one of the genera segregated from the old composite genus *Allodia* Winnertz sensu Edwards 1925 (= *Allodia* and *Brachycampta* of Winnertz, 1863) but it differed from any of the thirteen species already on the British list in several respects, the most striking being the abbreviated lower branch of the median fork, in which it resembles most species of the genus *Cordyla* Meigen (except *crassicornis* Meigen). It differed from *Cordyla*, however, in its simple palpi and in the other generic characters. Dissection of the hypopygium showed that this had a very characteristic structure different from any known British *Brevicornu* but conforming to the basic plan in this genus.

On reference to the Palaearctic key to the genus *Allodia* by Landrock (1927) the insect was found to run down readily to *A. serena* (Winnertz), which was transferred to *Brevicornu* by Tuomikoski (1966) in his revision of the Tribe Exechiini. It agrees entirely with the descriptions of continental authors in the salient external characteristics. In Edwards' key (1925), *B. serenum* runs to couplet 11 but does not fit any of the species there included well because it has four propleural bristles, the outer scutellars nearly as long as the inner pair and the base of the cubital fork well before the base of r-m.

B. serenum is also paler in colour than most British *Brevicornu*, being mostly brownish yellow bodied; the head and the prescutellar area of the thoracic dorsum are grey dusted. The abdominal tergites are narrowly darkened on the dorsal mid line, only the sixth tergite being more extensively darkened basally, the dark area being triangular and nearly reaching the side margins laterally; the hypopygium is also yellow but the capsule is darkened laterally. The antennae and legs are mainly yellow, the apical sixth of the hind femora darkened. The wings (Fig. 3) are yellow tinged. Wing length 2mm.; body length 3mm.

With respect to the genitalic structure this was figured by Dziedzicki (reproduced by Landrock, 1927, 1940) from Winnertz' type and by Lundström (1916) from material received by him. Although both of these figures clearly represent the same species to which my Pett's Wood specimen belongs, there are discrepancies between them and both appear inaccurate in certain respects. The figures given here (Figs. 1 and 2) were drawn from the British specimen. The claspers are different from other *Brevicornu* in that both upper and lower claspers have broadly rounded tips; the upper claspers have long bristles apically while the lower claspers are provided with a tuft of hairs on part of their internal face.

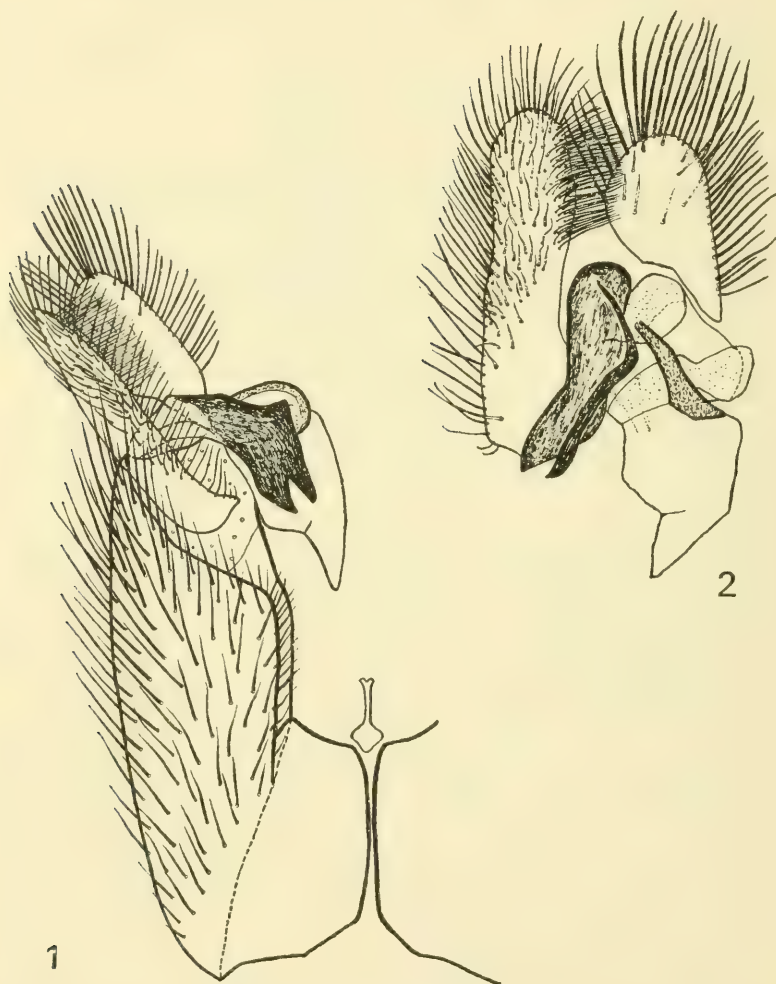


FIG. 1. Ventral view of male hypopygium. FIG. 2. Internal view of left claspers.

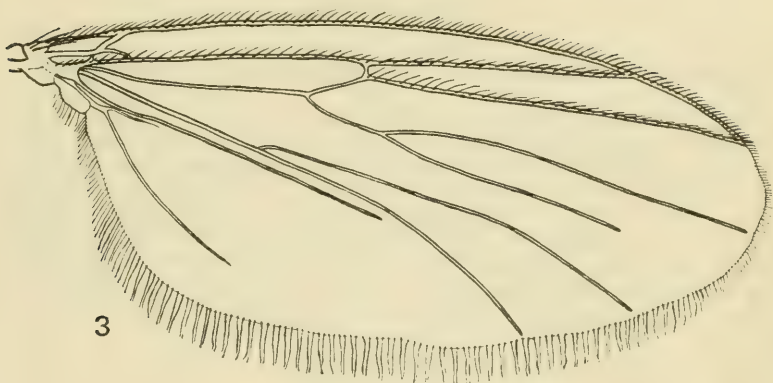


FIG. 3. Wing.

Winnertz (1863) described this species under the name *Brachycampta serena* on a single male collected in woodland in May, somewhere in central Europe, where it is evidently not a common species. Lundström (1916) recorded two males and three females collected by Ujhelyi in Hungary, iv.1913. Landrock (1940) could only refer to one record from Germany. Matile (1964), however, added the species to the French list from the island of Port-Cros (Iles d'Hyeres) off the Mediterranean coast, where it was apparently quite common in damp shady places (8th-15th October).

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AN IMPROVED ASPIRATOR (POOTER) FOR COLLECTING SMALL INSECTS

By L. J. EVANS

(Department of Biochemistry, University of Birmingham, Birmingham 15)

In using the sucking-type aspirator (Smart, 1948), the user is at risk from inhaling minute particles, scales, etc., too fine to be trapped at the filter. A practical solution to this problem was reported by Smith (1973) who described a blow (Venturi) type 'pooter'. However the assembly of this design was found to be difficult, particularly the precise positioning of the blowing tubes that is required for a strong suction. The present paper therefore describes how the apparatus was remodelled to overcome the construction difficulties and how further innovations were included to make it more versatile.

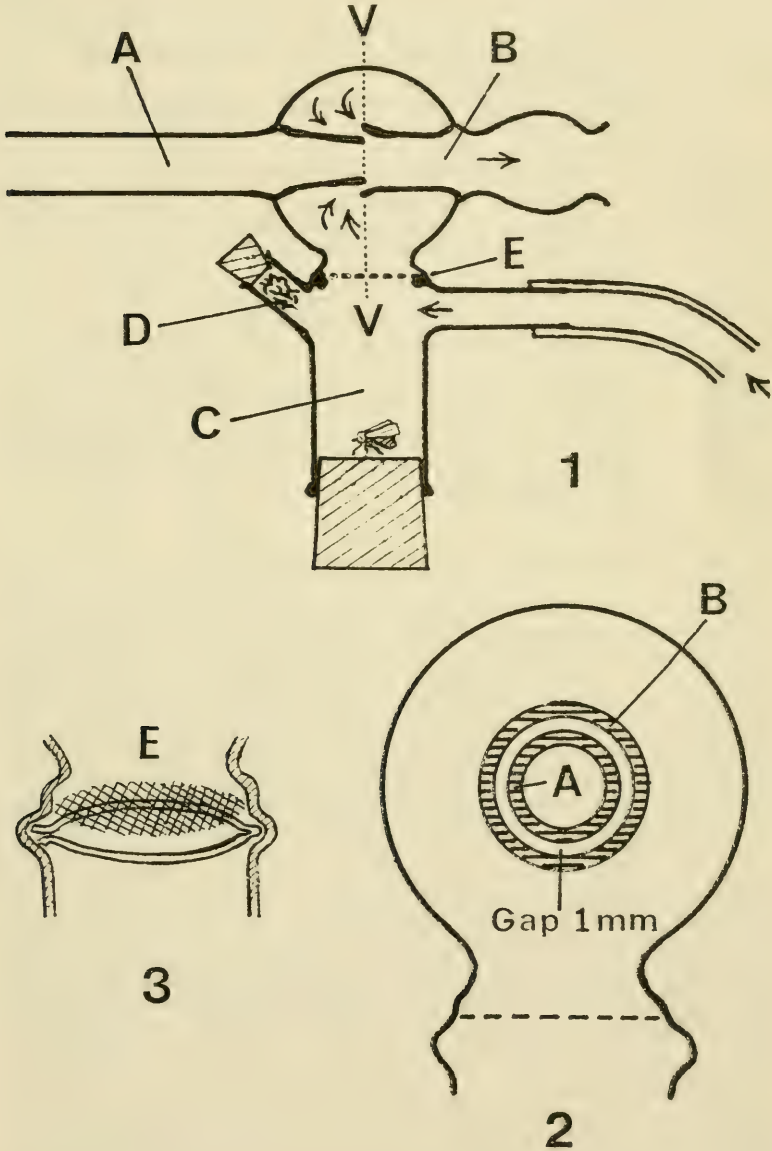
CONSTRUCTION

The apparatus is made from Pyrex glass tubing.

1. The mouthpiece (blowing tube) 'A' is made from 9mm. internal diameter medium wall tubing tapered down to approximately 6mm. internal diameter at the jet.
2. Tube 'B' is also made from 9mm. internal diameter tubing widened at the receiving end to approximately 10mm. internal diameter. The tubes 'A' and 'B' are sited opposite one another with no apparent gap when viewed from the side elevation (*Fig. 1*). A gap of 1mm. between the outside rim of jet 'A' and the inside rim of the receiving tube 'B' is seen in the enlarged diagram of the section VV (*Fig. 2*). This is the correct position to give good suction when blown.
3. The insect chamber 'C', 25mm. diameter, can be used as a handle, it is plugged at the bottom with a cork for the easy removal of insects.
4. The suction tube 30cm. long, 7mm. bore Polythene tubing is connected to the 7mm. bore inlet tube of the chamber which enters immediately below the gauze filter (*Fig. 1*).
5. The filter is made from fine-mesh copper gauze held in place by a stainless-steel expanding clip retained by two protuberances in the wall of the chamber (*Fig. 3*). This enables the filter to be removed periodically for cleaning.
6. The thistle-shaped end of the tube 'B' can be covered with a sheet of fine-mesh Nylon to retain any fine particles which pass through the gauze.

Active insects can be anaesthetised by placing drops of an appropriate anaesthetic on the cotton wool plug in the side tube 'D'.

FIG. 1. Side elevation. A. Blowing tube 9mm. internal diameter (medium wall) narrowed to 6mm. internal diameter at jet. B. Receiving tube 9mm. internal diameter (medium wall) widened to 10mm. internal diameter (facing jet). C. Insect chamber 25mm. diameter. D. Anaesthetic tube 7mm. diameter containing cotton wool and fitted with a cork. FIG. 2. Section through VV. Enlarged sketch of VV showing 'A' (end of jet) and 'B' (end of receiving tube) with 1mm. gap between external 'A' and internal 'B'. FIG. 3. Section 'E' enlarged. Illustrating gauze and ends of clip held in place by protuberances.



A SIMPLIFIED MODEL

Since making the blow-type 'pooter' described in the first part of this paper, much thought has been given to a simplified model suitable for construction by those possessing a limited knowledge of glass-blowing technique. The second part of this paper describes such a 'pooter' which with little skill can be made at home.

The apparatus is made from soda-glass tubing for easier working.

1. The mouthpiece (blowing tube) 'A' is made from 9mm. external diameter tubing 7cm. long (*Fig. 4*).
2. Tube 'B' is made from 11mm. external diameter tubing widened (flanged) at the receiving end to approximately 13mm. internal diameter.
3. Tube 'G' at least 7cm. long is cut from tubing 3cm. diameter and flanged at both ends to facilitate the easy entry of the corks.
4. The sucking tube 'F' 5cm. long is cut from 9mm. external diameter tubing and extended with Polythene tubing of a similar size.
5. The filter 'E' is cut from fine-mesh copper gauze and held in place immediately behind the flange on tube 'B' with 'Araldite' adhesive.

After the removal of insects from chamber 'C' in this model, which is done by removing the cork/filter assembly, care should be taken not to damage the filter when replacing it. The re-alignment each time of tubes 'A' and 'B' is very important to correct working. This is the main drawback with the apparatus when comparing it with the previous model, but with care and practice this is overcome.

NOTES ON GLASSWORKING (SODA-GLASS)

The cutting of glass tubing is no simple matter for the unskilled, but the following notes may be of some assistance. Small diameter tubing can be snapped in two parts after a scratch has been made half way round the circumference on the surface of the glass with the edge of a three-cornered file. The scratch should be made with a single one-way action (not a sawing action), and the snapping in two done by placing the thumbs facing each other, on either side of the scratch with the forefingers beneath the tube. Then by making a downward movement of the wrists the tube should snap. For safety one should protect the hands before doing this by wrapping the tube in a duster. When cutting larger diameter tubing, a scratch should be made circling the tube completely, the severing of the tube is brought about by placing a red-hot, thick iron wire (shaped to the tube) on the scratch, rotating the tube as one does so (*Fig. 5*). A crack will appear which will follow the hot wire round as the tube is rotated. Repeat if necessary. For anyone not wishing to snap narrow gauge tubing in their hands, the last method may be used instead. When beginning to work soda-glass tubing preliminary heating will help to prevent cracking. Pass the part of the tube to be worked in and out of a flame (gas-ring, bunsen burner or butane torch), (the author has made the simplified model using a gas-ring for working the glass), rotating it to get even heating and gradually bringing it fully into the flame after 10 to 15 seconds. To flange the end continue heating until dull red, still rotating the tube take it out of the flame and spin the flange by gently applying a thick iron wire (previously warmed to prevent chilling of the glass) at an angle of 45 degrees inside the end of the tube. The rotating action will spread the end outwards (*Fig. 6*). The temperature of the glass and the pressure applied will govern the width

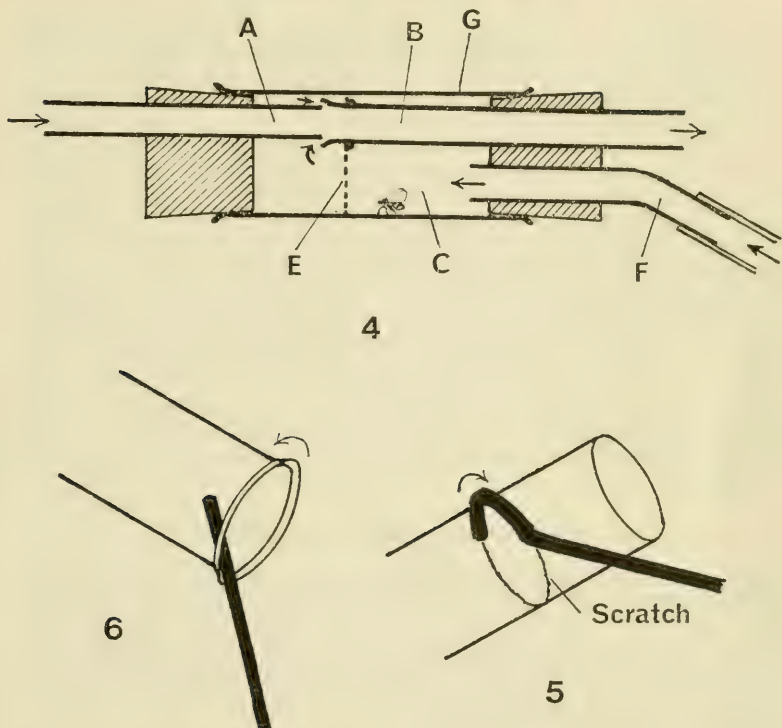


FIG. 4. Side elevation. A. Blowing tube 9mm. external diameter. B. Receiving tube 11mm. external diameter widened to 13mm. internal diameter (facing jet). C. Insect chamber. G. Insect chamber tube 3cm. diameter, flanged at both ends. E. Gauze filter. F. Suction tube 9mm. external diameter. FIG. 5. Cracking tubing with hot wire (bent to the shape of the tube). FIG. 6. Flanging the end of a tube.

of the flange. It is advisable to anneal glass that has been previously heated to prevent cracking. The simplest method is to reheat the part while still warm until dull red, then slowly raise it out of the flame causing it to cool gradually and finally removing after about two minutes. The tubes 'A', 'B' and 'F' should be a good fit in the corks. If cork-borers cannot be obtained, the holes can be drilled making them slightly smaller in diameter than the glass tubes.

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THE 1974 ANNUAL EXHIBITION

In spite of some apprehension that the poor summer would adversely effect the Exhibition, which was held at Holland Park School on 2nd November, both the standard of the exhibits and the attendance were excellent. The thanks of all are due to those members who helped to prepare the hall and provide the excellent refreshments.

As usual the Biological Records Centre gave an informative display, whilst the Amateur Entomologists' Society showed their wide range of publications. There were several photographic exhibits, which are mentioned under individual headings, but the colour prints of British butterflies exhibited by Mr. W. A. Vickers were outstanding. He had photographed all indigenous species and regular migrants in a project which lasted from the autumn of 1963 until July 1974. Mr. Brian Hargreaves showed original colour paintings for plates to be used in the forthcoming *The Moths and Butterflies of Great Britain and Ireland*. Mr. L. J. Evans showed an improved pooper which worked by the operator blowing rather than sucking. (Details of this will appear in the *Proceedings*.)

The other exhibits are dealt with under their respective headings. It is hoped that all exhibitors who supplied notes at the Exhibition are mentioned, but failure to do this may have resulted in omission.

BRITISH MACROLEPIDOPTERA

BAKER B. R. Variations in the following species: *Sphinx ligustri* L., three examples of ab. *brunnea* Tutt bred June 1974; *Selenia lunularia* Hübn., a dark form bred 1971 from an Oxfordshire parent. *Ennomos quercinaria* Hufn., a dark banded female from south Cornwall, 1974. Examples of four rare species taken by the late F. H. Lees in Kent from 1934-1935: *Catephia alchymista* D. & S., *Conistra erythrocephala* D. & S., *Luperina zollikoferi* Freyer, *Lithophane fucifera* Hufn.

BRETHERTON R. F. Lepidoptera taken during 1974: *Diaphora mendica* Clerck ab. *rustica* Hübn.; *Spilosoma luteum* Hufn., plain and spotted forms; *Hylaea fasciaria* L. f. *grisea* Fuchs; *Ennomos alniaria* L. f. *glabra* Lempke, all from Bramley, Surrey. An extreme form of *Xanthorrhoe munitata* Hübn in which the red band is replaced by silver, taken at Keld, Yorks. As two other specimens were noted, this form might possibly represent a local race. A chart showing average nightly numbers of macrolepidoptera and pyrales at his Bramley garden light trap from August to October during 1972, '73 and '74.

BRITISH MUSEUM (NATURAL HISTORY). Two drawers of *Achyla flavicornis flavicornis scotica* Tutt and *A. flavicornis galbanus* Tutt to show geographic variation. One drawer of Lycaeninae selected from the N. A. Watkins collection. One drawer from the collection of the late Mr. D. A. Ashwell showing some results of breeding experiments with *Abraxas grossulariata* L.

CHAPMAN T. A small exhibit of butterflies, including a specimen of *Cynthia cardui* L. from near Newbury, Berks., in August 1974.

COSTER W. L. An interesting selection of local species taken or bred during 1974, including a single example of *Euphyia biangulata* Haw. from Borth, Card. Migrants included were four specimens of *Macroglossum stellatarum* L. from Sandwich, Kent, all taken in the early afternoon at the flowers of Viper's Bugloss between the 19th and 22nd July. A female *Orthonoma obstipata* F. from the New Forest on 11th August. A male

Clostera anachoreta Schiff. taken at light at Dungeness, Kent, on 16th August (Plate III, Fig. 20).

CRASKE R. M. Aberrations of British Rhopalocera taken or bred during 1974, including a fine female *Hipparchia semele* L. ab. *monocillata* Lempke (Plate I, Fig. 2) and a female *Boloria selene* D. & S. ab. *nigricans-parvipunctata* Ob.

CRIBB P. W. British butterflies including both subspecies of *Erebia ephron* Knoch and a varied series of *Euphydryas aurinia aurinia* Rott. from Sussex and Cumbrian stock.

CROW P. N. A small selection of butterflies taken in North Wales in 1974. Of particular interest was a male *Lycaena phlaeas* L. ab. *obsoleta*.

DEMUTH R. P. A drawer of melanic Heterocera including many extreme forms. Perhaps the most spectacular were examples of *Hyloicus pinastri* L., *Anaplectoides prasina* D. & S. and *Dichonia aprilinea* L.

DYSON R. C. Aberrations of satyrid species including an extreme 'radiata' form of *Maniola jurtina* L. (Plate I, Fig. 5).

EVANS L. J. Varieties of British Butterflies from the G. C. Price collection.

FEENELL D. W. H. A single example of the green form, f. *prasinaria* Schiff of the geometrid *Hylaea fasciaria* L. was included among a small selection of aberrant Heterocera.

FLEMMING V. Short but varied series of *Mesapamea secalis* L. and *Agrotis exclamatoris* L.

FOLLETT P. An obsolete aberration of *Rusina ferruginia* Esp. (Plate II, Fig. 11), one of two taken on the same night at Brentwood, Essex, 24.vi.73.

GREENWOOD Mr. and Mrs. J. A. C. Records of *Biston betularia* L. from their light trap at Pyrford, Surrey, from 1969 to 1974. Relative percentages between the three main forms have remained remarkably constant during the six years, with *carbonaria* accounting for about 80% with the typical form and *insularia* forming 14% and 6% respectively. The only noteworthy exception was in 1971 when *carbonaria* declined to 71.5% and both the other forms showed an equal percentage increase.

HARBOTTLE Rev. A. H. H. and C. A series of *Maniola jurtina insularis* Thomson from Windsor Great Park and Wiltshire. The pride of place being a halved bilateral gynandromorph taken by Charles Harbottle, 16.vii.1974 (Plate I, Fig. 6).

HARMAN T. W. A suffused example of *Abraxas grossulariata* L. bred from wild larvae from Chesterfield, Derby. (Plate II, Fig. 10).

HARPER Dr. M. W. and LANGMAID Dr. J. R. *Agrotis segetum* D. & S., a unique aberration from Plymouth, S. Devon (Plate I, Fig. 7). *Ematurga atomaria* L. ab. *unicoloraria* Staud. taken on Cairngorm, 19.vi.1974. *Zygaena purpuralis caledonensis* Reiss, a very varied series taken on the Isle of Skye in June 1974.

HAXBY C. T. Specimens of *Erebia aethiops* Esp. from the N.E. Westmoreland colony.

HEATH J. A. Silvery-white variety of *Aglais urticae* L. bred from a larva taken at Monks Wood, Hunts.

HOARE M. J. A selection of British Butterflies including some extreme aberrations. The most remarkable being an obsolete male specimen of *Lycaena phlaeas* L. (Plate I, Fig. 4) from S. Devon.

HORTON Dr. G. A. NEIL. Single examples of Heterocera taken in Monmouthshire in 1974 were *Leucania obsoleta* Hübn., Usk, 25th June; *Euoxa obelisca* Schiff., Usk, 18th August; *Celaena leucostigma* Hübn., Usk, 21st August; all three being new county records. Other specimens of interest included a *Euphyia biangulata* Haw. from the Wye Valley and a series of *Colostygia salicata* Hübn.

HOWARTH T. G. Larvae of *Eupithecia phoeniciata* Rambur from a female taken at light in Beer, S. Devon.

JOHNSON P. J. A small selection of Noctuidae including several aberrations of *Agrotis exclamationis* L.

LEECH M. J. A drawer of fine set Lepidoptera containing a bred series of *Lithosia caniola* Haw. from wild larvae collected in Pembs. A pristine series of *Apamea furva* Schiff. from the Malvern Hills, Herts., usually a difficult species to obtain in good condition and a very light specimen of *Luperina testacea* Schiff. from S. Cornwall (Plate II, Fig. 15).

LIPSCOMBE Maj.-Gen. C. G. Series of *Pieris napi* L. showing both spring and summer forms.

MARTIN P. A. A small selection of British Lepidoptera including the newly discovered *Gortyna borelii* Pierret.

MICHAELIS H. N. Lepidoptera from North Wales including examples of *Oligia versicolor* Borkh. from Caernarvonshire, Denbighshire, and Merionethshire.

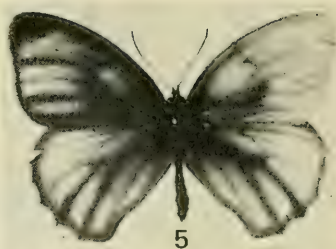
REID J. A small but very noteworthy collection of Lepidoptera taken in the past few years. Two specimens of *Shrankia intermedialis* Reid from its only known county of Hertfordshire (Plate III, Fig. 21). A male *Cucullia artemisiae* Hufn. bred from a larva found on *Artemisia vulgaris* L., at Nazeing, Essex, in August 1971 (Plate II, Fig. 8). A bleached female *Agrotis puta puta* Hübn. taken at light at Royston, Herts., 20.viii.1973 (Plate II, Fig. 16).

RENSHAW P. J. Small series of local Heterocera taken or bred 1973 and '74. Of particular interest were specimens of *Lithophane leautieri hesperica* Boursin and *Eupithecia phoeniceata* Rambur taken near Bognor Regis, Sussex, showing the eastward spread of these two species whose larvae are confined to *Cupressus*. The exhibit also contained a fine melanic example of *Colotois pennaria* L., bred from a larva from Hamstreet, Kent.

REVELL R. J. One display box showing inter- and intraregional variation in British Heterocera. A second box containing a selection of recent captures in Cardiganshire and Carmarthenshire including *Euphyia biangulata* Haw., and several interesting species taken in Argyllshire in 1973; these included *Aleis jubata* Thunb. and *Thera cognata* Thunb.

REVELS R. Four drawers of British Butterflies. One drawer showed the results of breeding experiments involving the freezing of newly formed pupae. Two drawers were the result of extensive breeding of *Lysandra coridon* Poda and *Aphantopus hyperantus* L. and included examples of the very rare ab. *pallens* Schultz of *A. hyperantus*. The fourth drawer contained a miscellany of wild caught aberrations among which were several black and white photographs of butterflies which had been hand-coloured using the Johnson's 'Photo Colouring Outfit'.

RICHARDSON N. A. Lepidoptera from North Wales taken in 1973 and 1974. Many of the species displayed showed a tendency to have darker markings than the comparable English forms.



THE 1974 EXHIBITION

1. *Precis octavia* Cramer ab. nov., Mr. L. McLeod; 2. *Hipparchia semele* L. ab. *monocillata* Lempke, Mr. R. M. Craske; 3. *Aphantopus hyperantus* L. ab. *lanceolata* Schiff., Mr. R. W. Watson; 4. *Lycaena phlaeas* L. ab., Mr. M. J. Hoare; 5. *Maniola jurtina* L. ab., Mr. R. C. Dyson; 6. *M. jurtina* L. gynandromorph, Mr. C. Harbottle; 7. *Agrotis segetum* D. & S. ab., Drs. M. W. Harper and J. R. Langmaid; 8. *Cucullia artemisiae* Hufn., Mr. J. Reid.

Photographs by D. E. Wilson



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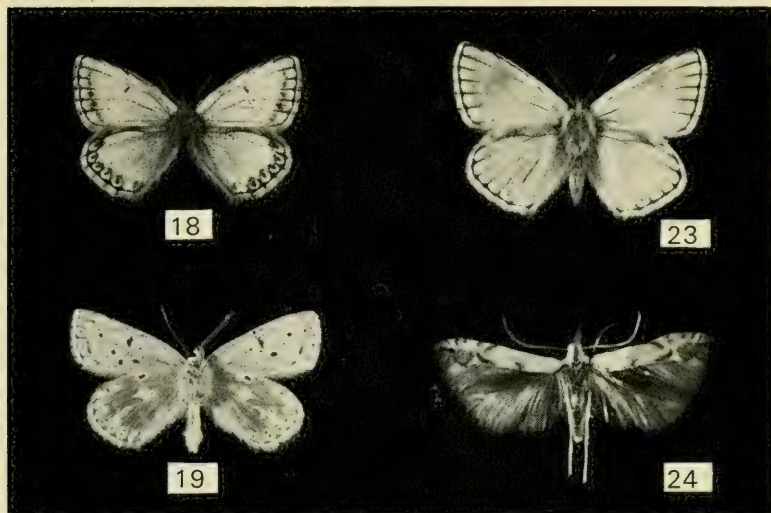
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9. *Mimas tiliae* L. melanic, Mr. D. B. Tyler; 10. *Abraxas grossulariata* L. ab., Mr. T. W. Harman; 11. *Rusina ferruginia* Esp. ab., Mr. P. Follett; 12. *Semiothes signaria* Hübn., Mr. R. C. Tomlinson; 13. *Rhodometra sacraria* L. ab., Mr. B. F. Skinner; 14. *Melitaea didyma* Esp. albino, Mr. J. L. Fenn; 15. *Luperina testacea* Schiff. ab., Mr. M. J. Leech; 16. *Agrotis puta* Hübn., Mr. J. Reid; 17. *Xanthorhoe designata* Hüfn. ab., Mr. W. G. Vosper.

Photographs by D. E. Wilson



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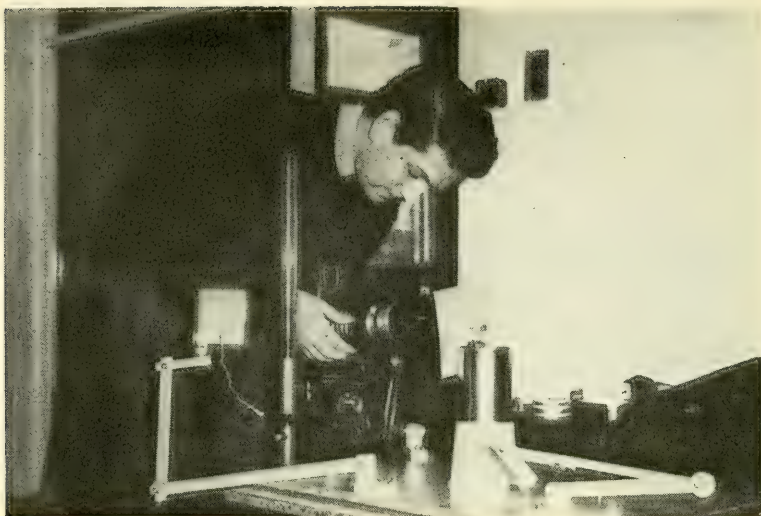
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18. *Lysandra coridon* Poda ab. *ultrafowleri* B. & L., Messrs. A. D. A. Russworm and H. G. M. Middleton; 19. *L. coridon* ab., Messrs. A. D. A. Russworm and H. G. M. Middleton; 20. *Clostera anachoreta* Schiff., Mr. W. L. Coster; 21. *Shrankia intermedialis* Reid ($\times 4$), Mr. J. Reid; 22. *Ectoedemia erythrogenella* de Joannis ($\times 6$), Col. A. M. Emmet; 23. *Lysandra coridon* Poda ab. *syngrapha* Keferst and ab. *fowleri* South, Mr. R. Tubbs; 24. *Phyllocnistis* sp. ?*xenia* Hering ($\times 6$), Mr. E. C. Pelham-Clinton; 25. *Phania vittata* Mg. ($\times 4$), Mr. P. J. Chandler; 26. *Strangalia maculata* (Poda) ab., Mr. D. Appleton.

Photographs by D. E. Wilson



Mr. D. E. Wilson photographing exhibits at the 1974 Exhibition.



Sir Eric Ansorge and Baron Charles de Worms at the Exhibition.

Prints by Mr. W. Rivers from colour transparencies by Dr. P. A. Boswell.

RUSSWURM A. D. A. and MIDDLETON H. G. M. A selection of rare and unusual aberrations of British Rhopalocera taken or bred during 1974. Of outstanding interest were several aberrations of *Lysandra coridon* Poda including a male ab. *ultrafowleri* B. & L., and a female underside of ab. *decrescens postcaeca* B. & L. (Plate III, Figs. 18 & 19).

SIGGS L. W. Lepidoptera taken at Minstead, Hants. during 1974. These included the first Hampshire record of *Discoloxia blomeri* Curt., the second county record of *Agrotis trux lunigera* Steph., and a single *Rhodometra sacraria* L. taken on 11th September.

SKINNER B. F. Two drawers of Clearwings collected during 1973 and '74, representing all fourteen resident species. The exhibit contained sections of foodplants showing signs of early stages and photographs of typical habitats. A small selection of aberrant Lepidoptera including single specimens of *Hylaea fasciaria* L. f. *prasinaria* from Hamstreet, Kent and an obsolete female of *Rhodometra sacraria* L. (Plate II, Fig. 13).

TOMLINSON R. C. A selection of moths taken in S. Essex over the past few years. The highlight was undoubtedly the male *Semiothes signaria* Hübn. taken in an Essex woodland in 1970 (Plate II, Fig. 12). Also of interest was the third Essex record of *Parascotia fuliginaria* L.

TREMEWAN W. G. A series of aberrations of *Zygaena trifolii palustrella* Verity from Surrey. These included some fine yellow, orange and confluent forms.

TUBBS R. An unrivalled display of *Lysandra coridon* Poda including two specimens which were combinations of ab. *syngrapha* Keferst and ab. *fowleri* South. (Plate III, Fig. 23).

TYLER D. B. A case of bred specimens of *Mimas tiliae* L. including several unusual melanics (Plate II, Fig. 9).

VOSPER W. G. An outstanding aberration of *Xanthorrhoe designata* Hufn. (Plate II, Fig. 17).

WALKER D. H. A female variety of *Melanargia galathea serena* Verity from Dorset, August 1974.

WATSON R. W. The continuing saga of *Tyria jacobaeae* L. showing new combinations of these extreme strains. Several drawers of unusual aberrations including an extreme ab. *lanceolata* Schiff. of *Aphantopus hyperantus* L., donated to the Watson Coll. by R. E. Stockley (Plate I, Fig. 3).

WEST B. K. Aberrations of British moths including ab. *tiltscheri* Dioszeghy of *Autographa gamma* L.

WORMS Dr. C. G. M. DE. A selection of Lepidoptera taken and bred during 1974. Of the more noteworthy represented were *Chlorissa viridata* L. from the Lizard, Cornwall and a male *Pieris rapae* L. in which the superficial markings were almost absent.

MICROLEPIDOPTERA

BRETHERTON R. F. Taken during 1974: *Dioryctria abietella* D. & S. f. *abietella*, Bramley, 25.vi, very large, probably immigrant; *D. abietella* f. ?sp. *mutatella* Fuchs, smaller and native, for comparison.

CHALMERS-HUNT J. M. Taken or bred during 1974: *Coleophora ahenella* Hein., short series bred, 23-30.v, from *Rhamnus catharticus*, Cholderton, Wilts.; *C. spissicornis* Haw., Blackheath, Kent, bred 22.vi-10.vii from *Trifolium repens* L.; *C. fuscicornis* Zell., Fingringhoe, Essex, taken 3.vi; *C. pappiferella* Hofm., Cahir River, Clare, W. Ireland, bred 12-17.v, from *Antennaria dioica* L.; *Sterrhopterix fusca* Haw., Witherslack, Westmor-

land, male, taken on the field meeting, 29.vi; *Aristotelia brizella* Tr., Portland, Dorset, bred 28-31.vii, from thrift; *Bryotropha mundella* Doug., Fanore Strand, Clare, pale Irish form, taken 30.v; *Epiphyas postvittana* Walk., West Cornwall, a variable series bred ix-x, mostly from *Veronica* sp.; *Nepticula speciosa* Frey, Eden Park, Kent, six bred, 8-12.viii, from sycamore; *Platyptilia tesseradactyla* L., Rinnamona, Clare, typical specimens and one albino, taken 29.v; *Stenoptilia saxafragae* Fletch, Moheramoylan, Clare, bred 23-26.vi, from moss saxafrage; *Endothenia ustulana* Haw., Downe, Kent, one taken 12.vi; *Catoptria permutatella* H.-S., Turriff, Aberdeenshire, 27.vii, taken by and presented to the exhibitor by Mr. R. M. Palmer; *Archinemapogon laterella* Thunb., Rannoch, Perthshire, 23.v, bred from *Boletus* and presented to the exhibitor by Dr. B. J. MacNulty.

EMMET Col. A M. (1) Maps showing the number of records of Nepticulidae by vice-counties (a) on 1.xi.73 and (b) on 1.xi.74. The number has risen from 1,629 to 3,121—an increase of 1,492. The records are required for volume 1 of *The Moths and Butterflies of Great Britain and Ireland*. (2) Set specimens and leafmines of four species of the *ruficapitella* group (Lep. Nepticulidae), viz. *Stigmella atricapitella* Haw., *S. ruficapitella* Haw., *S. roborella* Johannson and *S. svensoni* Johannson. The purpose of the exhibit is to give assistance in the determination of these similar species. (3) A drawer containing specimens and/or mines of interesting leaf-mining microlepidoptera as follows. *Ectoedemia erythrogenella* de Joannis (Plate III, Fig. 22), five from Portland, Dorset and two from Benfleet, Essex, bred 28.vi-8.vii.74, together with a mine on *Rubus fruticosus* L. agg. from Portland. This species was added to the British list when mines were first found at Portland on 28.x.73. *E. mediofasciella* Haw. (*woolhopiella* Staint.), mines in a leaf of hazel (*Corylus avellana* L.) found at Killarney, Kerry, 5.viii.74. This is the first record of this species on hazel. A mine on birch (*Betula* sp.), also from Killarney, was shown for comparison. *E. atrifrontella* Staint., a mine in the bark of a thin branch of oak, taken at Snaresbrook Common, Middlx., 11.x.74. This is the first record of the mine in Britain. The text-books erroneously describe the larva as feeding on *Genista*. *Fedalmia headleyella* Staint., set specimens, bred 3.v.-30.vi.74 from Downe Bank, Kent, together with the larval mine which is unusual in that the larva passes from leaf to leaf by way of petioles. *Levarchama cryptella* Staint., set specimens, bred 2-8.iii.74 from mines on *Lotus corniculatus* L. and *L. uliginosus* Schkuhr taken Ballynahinch, Co. Galway, is new to Ireland. *L. eurema* Tutt, set specimens bred 28.iii-16.iv.74, from mines in *L. corniculatus* for comparison with the above. *Stigmella auromarginella* Richardson, set specimens bred 20.viii.74 together with a mine on *Rubus fruticosus* L. agg. taken at Funshin More in south-east Galway, is a new vice-county record and the second record for Ireland. *Stigmella dryadella* Hofmann, set specimens bred 25-30.viii.74 from Cahir River, Clare and Funshin More, Co. Galway, and a new vice-county record for the latter; mines on *Dryas octopetala* L. were also shown. *S. filipendulae* Wocke, set specimens bred 24.ii-6.iii.74 from Winchester, Hants., together with a mine on *Filipendula vulgaris* Moench. *S. salicis* Staint., set specimens bred 14-15.viii.74 from Ballynahinch, Co. Galway, together with mines in a leaf of *Salix aurita* L.; with for comparison, specimens bred from *S. caprea* L. from Debden, Essex and Monks Wood, Hunts. The specimens from *S. aurita* may be a different species new to Britain, *Stigmella auritella* Skala being a possibility. *S. pyri* Glitz, a set specimen bred 17.iv.74 from a mine on pear (*Pyrus communis* L.) taken at Rye Street, Worcestershire. Hitherto this species has been

recorded only from Surrey, Sussex and Herefordshire. *S. tiliae* Frey, set specimens bred 2-6.viii.74 from mines on small-leaved lime (*Tilia cordata* L.) taken at Haugh Wood, Herefordshire. *S. spinosissimae* Waters, set specimens, bred 31.vii-20.viii.74 from mines on *Rosa pimpinellifolia* L. taken at Funshin More, Co. Galway. A new vice-county record. *S. aucupariae* Frey and *S. nylandriella* Tengstrom, set specimens bred 30.iii-11.iv.74 (*aucupariae*) and 1.iv-2.v.74 (*nylandriella*) from mines on *Sorbus aucuparia* L. taken at localities in Co. Galway. Examples of the mine of each species were shown for comparison. *S. nylandriella* is new to Ireland. *S. acetosae* Staint., set specimens bred 14.vi.74 from Icklingham, Suffolk, together with mines on *Rumex acetosa* L. This is the smallest moth. *Lyonetia prunifoliella* Hübn., a mine, evidently of this species on *Sorbus aucuparia* L. taken at Anstey, Leicestershire on 27.viii.74. This species has hitherto been recorded only from Northamptonshire and Sussex and there have been no recent records. *Phyllocnistis xenia* Hering, a set specimen, bred 7.x.74 from east Kent, together with a mine on *Populus canescens* (Aiton) Smith. This species is new to Britain and was discovered by Mr. E. C. Pelham-Clinton on 8.ix.74. Specimens and a mine on black poplar (*P. nigra* L.) of *P. suffusella* Zell. were shown for comparison. Also shown were four scarce Phyllonorycters: *P. roboris* Zell. and *P. distentella* Zell., both taken at Hough Wood, Herefordshire, 15.vi.74; *P. muelleriella* Zell., bred 23-31.i.74, from *Quercus* sp. taken at Arnside Knott, Westmoreland; *P. insignitella* Zell., bred 15.viii.74 from *Trifolium* taken at Cornamona, Co. Galway—a new county record.

FAIRCLOUGH R. and A. J. *Acleris cristana* D. & S., two rare forms, *meyrickiana* Manley and *subclerkiana* Manley, caught and bred 1974; also, specimens of *Cochylidia heydeniana* H.-S. and *Falseuncaria degreyana* McLachlan from Suffolk, 3.viii.74.

FFENNELL D. W. H. *Caloptilia leucapennella* Steph., series bred from *Quercus ilex*, Isles of Scilly; *Acrocercops imperialella* Zell., series bred from *Pulmonaria longifolia*, Isle of Wight; *Glyphipteryx equitella* Scop., series from Winchester, Hants.; *Phyllonorycter muelleriella* Zell., bred Linton, Hereford; *Mompha epilobiella* Roemer, Woody Bay, Devon; *Nothris congressariella* Bruand, bred of Isle of Scilly; *Bryotropha basaltinella* Zell., Moccas, Hereford; *Pammene albuginana* Guen., St. Helens, Isle of Wight; *P. obscurana* Steph., Oxenbourne Down, Hants.

HORTON Dr. G. A. NEIL. From Monmouthshire: *Ancyliis geminana* Don., 1973; *Epiblema foenella* L., 1973-74. Also, the following new county records: *Ptycholomoides aeriferanus* H.-S., 3 males, 2 females, 10.vii.1973; *Pammene aurantiana* Stgr., Usk, 25.vii.1973.

MICHAELIS H. N. Lepidoptera from N. Wales including *Anerastia lotella* Hübn., Anglesey; *Epinotia caprana* F., Anglesey and Caerns.; *Coleophora inulae* Bork., Caerns.; *Elachista magnificella* Tengst., Caerns.; *Argyresthia conjugella* Zell. and dark form, Dyffryn Conwy. Also, *Monochroa suffusella* Doug., Caerns., probably first record for N. Wales.

PEET Dr. T. N. D. From Norfolk, 1974. *Perinephela perlucidalis* Hübn., Broads, perhaps the first county record. *Cosmopterix lienigiella* Zell., and *Exaretia allisella* Staint.

PELHAM-CLINTON E. C. *Phyllocnistis* sp., probably *xenia* Hering (Plate III, Fig. 24), bred from mines on *Populus canescens* collected near Dover in September 1974: new to the British list.

PICKERING R. R. *Uresphita limbalis* D. & S., determined by Mr. J. D. Bradley. It was taken at light 14th September, 1974 at Aldwick Bay, Sussex.

REVELL R. J. Species taken in S. Cambridgeshire, 1970-74, including *Alispa angustella* Hübn., perhaps a new county record; *Crambus falsellus* D. & S.; *Ptycholomoides ariferanus* H.-S., a new country record; *Eurhodope suavella* Zinck.

WATKINSON Dr. I. A. A drawer representing some 25 of the 50 species of the genus *Phyllonorycter* Hübner. The exhibitor gave a short introduction and brief notes on the life cycle and method of collecting these, and included a copy of the paper by S. N. A. Jacobs (in *Proc. S. Lond. ent. nat. Hist. Soc.*, 1944-45: 32-59) for anyone needing further information.

NON-BRITISH LEPIDOPTERA

If the poor summer of 1974 caused some poverty in the exhibits of British Lepidoptera, this was compensated by a fine showing, mostly of Rhopalocera, from Europe and further afield. From Spain Mr. O Kudrna presented three races of *Parnassius apollo* L., and also some *Meleageria daphnis* D. & S. from Albarracin, brown females of which have not been previously recorded in Spain; and Mr. T. J. G. Homer had a good range of species taken from Ronda and Teruel in June and July. Mr. D. Fennell showed some capture in Morocco, including a *Spiala sertorius ali* Obth. very different from the European sub-species.

France was well represented. Mr. R. F. Bretherton showed examples of Rhopalocera (42 species out of 53 seen) and also some selected Heterocera from the Dordogne Department, providing a contrast to what might be seen in Britain at that season. Mr. L. McLeod provided some unusual forms of Rhopalocera and fine colour photographs of the life cycle of *Zerynethia polyxena* D. & S., and Dr. G. A. N. Horton some species, including *Pyrgus sidae* Esp., both from south east France. Mr. A. Heselden's exhibit included *Erebia ottomana tardenota* Praviel from the Ardèche Department and also a curious *Plebicula dorylas* D. & S. with a dusky underside, from the Alps.

Mr. J. L. Fenn showed a great range of Rhopalocera and some Heterocera, in beautiful condition, mostly from Bavaria and the eastern Alps; it was strong in elusive species such as *Lycaeides argyrognomen* Bergstr., *Lopinga achine* Scop., *Erebia nivalis* de Less, and the Fritillaries *Mellicta aurelia* Nick, *M. britomartis* Assmann, *M. asteria* Frr., as well as a series of blue females of *Lysandra bellargus* Rott. He also had an albino *Melitaea didyma* Esp. (Plate II, Fig. 14). Mr. and Mrs. Mansell showed mountain species, especially Erebias, from the Black Forest and the Simplon area; and Mr. S. E. Whitebread two drawers from Canton Graubünden in Switzerland in which the species were interestingly arranged according to the altitudes of their capture, from 500m. to 2,500m. Mr. G. Prior showed 38 species of Rhopalocera taken at Castel d'Aiano in the Italian Appennines in June 1973 and 1974.

For Greece Mr. R. F. Bretherton and Baron de Worms each showed results from an expedition to the north Peloponnese and to the Veluchi mountains in mid-July. The most remarkable capture, by Baron de Worms, was a single male *Agrodiaetus damone damone* Eversmann. This species has not previously been recorded from Europe west of the Ukraine. (Another example was caught on the same mountain a few days earlier by another BENHS member but was not exhibited.) These exhibits also

contained a number of the rare white female f. *jountaineae* Aigner of *Colias aurorina heldreichi* Stdgr. and series of *Pseudochazara mamurra graeca* Stdgr., *Erebia ottomana brueschi* Warren, *Boloria graeca graeca* Stdgr., and *Heodes virgaureae balcanicola* Graves—the last three from near the southern limit of their European range; also a fine *Plebejus pylaon* Fischer with confluent underside. Mr. W. G. Tremewan showed the Burnets *Zygana manlia* Led. and *Z. excellens* Reiss, native in Iran, which he had bred *ab ovis*.

Exhibits of tropical butterflies made an attractive and colourful showing. Mr. T. W. Harman presented a selection which he had taken in Guyana, South America, in July and August, and Baron de Worms some taken in Jamaica in April. Mr. L. McLeod had a remarkable aberration of *Precis octavia* Cramer (Plate I, Fig. 1), with a series of it bred to show seasonal variation. Dr. T. N. D. Peet and Mr. R. B. Kinder showed a splendid drawer of *Charaxidae* from Malawi, Kenya and Uganda, including several rare species. Mr. D. A. Trembath displayed a great variety of Rhopalocera collected on a safari holiday in Kenya in the autumn of 1973, and also some caught in Florida and Virginia, U.S.A., in April 1974.

HYMENOPTERA

Only two exhibits involving named British Hymenoptera were on display. Mr. P. N. Crow exhibited a few species from north Wales, along with some of his Diptera. These were a female of the large ichneumon-wasp *Amblyjoppa proteus* Christ which was bred from a pupa of *Deilephila elpenor* Linn., obtained as a larva in August 1973 from Maentwrog; a female of the common bumblebee *Bombus pascuorum* (Scop.) (= *agrorum* (F.)) and a male of this bee's special brood parasite or inquiline, the cuckoo bumblebee *Psithyrus campestris* Panzer. Also shown were a male *Dolichovespula norvegica* F.—one of the two British species of social arboreal wasps—and a female of the cuckoo wasp *Vespula austriaca* (Panzer). *V. austriaca* is the inquiline of *Vespula rufa* (L.) and is of mainly western and northern distribution in the British Isles. Mr. Crow's example is of some interest, as the only Welsh specimen in the collection of the British Museum (Natural History), London is a female from Llangollen in 1894. A male and female of the solitary bee *Colletes cunicularius celticus* O'Toole were also exhibited. This bee is of limited distribution in Britain, known mainly from coastal localities in Wales and Lancashire. The subspecies *celticus* was described in 1974.

The second exhibitor, Mr. G. R. Else, showed adults, nests and parasites of two local British bees, *Hoplitis claviventris* (Thomson) and *Hylaeus* (= *Prosopis*) *pectoralis* Forster. The specimens of *claviventris* were bred in early May 1974 from bramble-stem nests collected on Oxenbourne Down, near Petersfield, Hampshire in the latter part of 1973. Two of these nests, longitudinally sectioned and containing the empty cells were displayed. A pair of *Stelis ornatula* (Klug), the rare cleptoparasitic bee of *claviventris*, bred from host nests in late April and early May 1974 were included in the exhibit. Several specimens of *H. pectoralis*, mostly reared in the spring of 1974 from the vacated galls of the Chloropid fly *Lipara lucens* Meigen were displayed. The localities from which these were reared—Browdown, Hamble Common and Bishops Waltham—are all in south-eastern Hampshire. Three nests from Browdown, near Lee-on-Solent, were shown: the *lucens* galls occurred on the stems of the Common Reed. Also shown were

the uncommon Evanid parasites of this bee—*Gasteruption jaculator* (Linn.) and *G. assectator* (Linn.)—bred from Hampshire nests. A male of the common spicid wasp *Trypoxylon figulus* (L.), reared from an unusual nest-site, located in a vacated *pectoralis* nest collected at Browndown in 1973 was exhibited along with its nest, containing three *figulus* cocoons. *T. figulus* usually nests in bramble stems, occasionally in the soil. A pair of Hampshire *Lipara lucens* completed this exhibit.

DIPTERA

Mr. C. O. Hammond exhibited a female specimen of the rare Syrphid *Callicera spinolae* Rdi. from Norfolk, the eighth to be collected in Britain; his exhibit was enhanced by three excellent photographs of the fly feeding at ivy flowers. He also showed a drawer of Hover Flies (Syrphidae) including many of the rarer and more striking British species, especially those associated in the larval stage with rotten wood. Among these were *Calliprobola speciosa* Rossi, an attractive denizen of Windsor Forest, Berks.; *Pocota personata* Harris, from Trent Park, Middx., rarely encountered because it breeds in rot-holes high up in trees; *Brachypalpus eunotus* Lw., the male taken by him at Cothill, Berks., 3.v.1953, one of the only two known British specimens, the first having been taken by J. H. Wood at Ledbury, Herefordshire, 6.v.1899 and now in the British Museum (Nat. Hist.); *Doros conopseus* F., a large distinctive insect but rarely met with—it has persisted at Benfleet, Essex for 200 years but recent habitat destruction there has placed its future in jeopardy; *Hammerschmidtia ferruginea* Fall. from Grantown-on-Spey, a Scottish speciality; *Ferdinandea ruficornis* F., a rarely seen early spring species.

Some uncommon Diptera collected during 1974 were exhibited by Mr. P. J. Chandler. These included three which are the only British species in their respective groups and probably all developing in rotten wood, i.e. *Rainieria calceata* Fall (Micropezidae), still known only from Windsor Forest, Berks., where it develops in dead beeches; *Tanypeza longimana* Fall. (Tanypezidae) from Leckford, Hants., possibly developing in a rotten willow log, providing the fourth British locality; *Megamerina loxocerina* Fall. (Megamerinidae), widespread but very local. Other species in this exhibit were *Phania vittata* Mg. (Tachinidae) (Plate III, Fig. 25), a curious species parasitising Pentatomid bugs, from Duford Heath, Sussex, only the second British specimen, the first being found at Whippendell Wood, Herts. in 1956; *Mintho rufiventris* Fall. (Tachinidae), a parasite of Pyralid larvae more often found in gardens than elsewhere; *Psilocephala rustica* Pz. (Therevidae), a pair of this sexually dimorphic species from the bank of the Sussex Rother, this fly of which the larvae develop in the mud of river-banks had only previously been recorded from the Welsh border counties; *Arocera globulus* Pz. (Acroceridae), specimens of this spider parasite from the South Downs; *Gimnomera tarsea* Fall. (Scatophagidae), a new rearing record from the seed capsules of Lousewort (*Pedicularis palustris* L.); *Cosmetopus dentimanus* Zett. (Scatophagidae), the first British male from Leckford, Hants., confirming the identity of this species added to the British list during 1974 from three females; *Gnoriste bilineata* Zett. (Mycetophilidae), a large fungus-gnat confined to the Spey Valley, Scotland, in this country; *Macrocera fascipennis* Stg. (Mycetophilidae) from Argyllshire, the first Scottish record of this bog species.

He also showed a selection of the Diptera collected during a visit to

Sri Lanka (Ceylon) in February 1974; these were chosen to show the range of species included in the catch, which was deficient in larger tropical Diptera probably due to the unusually dry weather for the time of year immediately preceding the visit. Most notable were the Stalk-eyed Flies (Diopsidae) and Beetle Flies (Celyphidae), the latter with their expanded shiny scutellum concealing the wings; some stilt-legged Micropezidae resembling the British *Rainieria* exhibited; the picture-winged Tephritids and Lauxaniids; the pan-tropical Stratiomyid *Hermetia illucens*, a large refuse-feeding fly of American origin. Among the Syrphids, poorly represented in the catch, the striking *Dideopsis aegrotus* F. and the curious little *Rhinobaccha gracilis* de Meij. are worthy of mention.

Other Diptera exhibits included a distribution map of the Asilid fly *Leptarthrus brevirostris* Mg. compiled by Mr. A. E. Stubbs, augmented by specimens and a line drawing of the insect concerned; the fly is restricted to chalk downland in the south-east but prefers acid soil in the west and north, with an intermediate zone on limestone and calcareous clays. Included in Mr. J. M. Chalmers-Hunt's exhibit was a specimen of *Stratiomys furcata* F. (Stratiomyidae), collected in the Burren, Ireland, in May 1974, while Mr. P. N. Crow showed a female of *Eriozona syrphoides* Fall. (Syrphidae), the fifth he had taken of this species which he added to the British list in 1968.

COLEOPTERA

The Coleoptera were well represented this year with many interesting and rare species. Mr. D. Appleton exhibited 27 species, mainly from Hampshire, notable ones being *Caenoscelis subdeplanata* Bris., Eastleigh district, 13.10.74, new to Hampshire, *Rhizophagus nitidulus* (F.) Fareham district, 24.3.74 *Ernobius nigrinus* (Sturm) New Forest, 4 and 11.5.74, new to Hampshire, *Obrium brunneum* (F.) Bishops Waltham district, 15.6.74, *Strangalia aurulenta* (F.) New Forest, 6.7.74, and *Polydrusus sericeus* (Sch.) Andover district, 12.6.74. He also exhibited an example of *Strangalia maculata* (Poda) taken at Harewood Forest, Hants., which had very reduced yellow markings (Plate III, Fig. 26). Mr. P. W. Cribb exhibited a case of Coleoptera from France which included some of the beautiful continental Scarabidae.

Of particular interest was the mine of the weevil *Rhynchaenus erythropus* Germ., in a leaf of *Quercus ilex* L., taken by Mr. D. W. H. Fennell, 29.10.74, in the Itchen Valley, Hants. This represents a new species to Britain and the beetle will no doubt be diligently searched for in 1975. Mr. A. E. Gardner's 30 species from the south and south-west of England included *Atheta harwoodi* Will., from an owl's nest, *A. scotica* (Ellim) and *A. deformis* (Kraatz) from mole nests, Leckford, N. Hants., 17.3.74. Also included were a number of species found by Mr. R. D. Weal in hardwoods from the Ivory Coast imported into the Surrey Docks, London, and a large Dynastid *Strategus aloeus* L., found on a rubbish dump at Grantham, Lincs., in June 1974, and presented by Mr. W. Parker. A full report on these importations will appear as a separate paper. A selection of beetles taken during the past few years by Mr. M. J. Leech included a series of *Oncomera femorata* (F.) taken at night on ivy blooms in the Studland area of Dorset, a bred specimen of *Harminius undulatus* (Deg.) from Northumberland, and *Carabus clathratus* L., from the Burren, Co. Clare.

FIELD MEETINGS

WALBERSWICK AND SOUTHWOLD, SUFFOLK — 3rd/4th August 1974

Leader — Mr. H. E. CHIPPERFIELD

Eleven members and one visitor met at the leader's home in Walberswick at 3.00 p.m. on 3rd August. During the subsequent discussion a Humming-bird Hawk-moth (*Macroglossum stellatarum* L.) (Lep. Sphingidae) was seen hovering over valerian in the garden. This was the first specimen of this species seen there in the eight years of the leader's residence.

The evening collecting operations were carried out in the local marshes, on the Southwold sandhills, at Dunwich between the marsh and the beach and in the leader's garden. A strong wind reduced records in the Dunwich habitat to a very few species which, however, included *Photodes brevilinea* Fenn. In the more sheltered Walberswick reed-beds and at Southwold a total of 154 species was recorded and a further 13 species were added during the following week by Mr. E. H. Wild from Dunwich Forest.

The more interesting species seen were: *Laothoe populi* L., *Pheosia tremula* Clerck., *Notodonta dromedarius* L., *Ptilodontella cucullina* D. & S., *Ptilodon capucina* L., *Pterostoma palpina* Clerck., *Phalera bucephala* L., *Habrosyne pyritoides* Hufn., *Thyatira batis* L., *Euproctis similis* Fuess., *Malacosoma neustria* L., *Lasiocampa quercus* L., *Philudoria potatoria* L., *Gastropacha quercifolia* L., *Cilix glaucata* Scop., *Nola cucullatella* L., *Meganola albula* D. & S., *Thumatha senex* Hübn., *Eilema griseola* Hübn., *E. lurideola* Zinck., *E. complana* L., *Spilosoma luteum* Hufn., *Phragmatobia fuliginosa* L., *Arctia caja* L., *Euxoa cursoria* Hufn., *E. tritici* L., *Agrotis vestigialis* Hufn., *Lycophotia porphyrea* D. & S., *Xestia ditrapezium* D. & S., *X. triangulum* Hufn., *Naenia typica* L., *Noctua interjecta* Hübn., *N. fimbriata* Schreb., *Discestra trifolii* Hufn., *Lacanobia suasa* D. & S., *Mythimna straminea* Treits., *M. litoralis* Curt., *Photodes elymi* Treits., *P. brevilinea* Fenn., *Arenostola phragmitidis* Hübn., *Archanara dissoluta* Treits., *A. neurica* Hübn., *Chilodes maritimus* Tausch., *Hoplodrina ambigua* D. & S., *Apamea oblonga* Haw., *Eremobia orchroleuca* D. & S., *Mesoligia literosa* Haw., *Celaena leucostigma* Hübn., *Acrionicta leporina* L., *Simyra albovenosa* Goeze, *Cucullia asteris* D. & S., *Macrochilo cribrumalis* Hübn., *Pseudoterpna pruinata* Hufn., *Idaea straminata* Borkh., *Perizoma flavofasciata* Thunb., *Pelurga comitata* L., *Eupithecia succenturiata* L., *Semiothisa wauaria* L., *Schoenobius gigantella* D. & S., *Pima boisduvaliella* Gaen., *Nyctegretis achatinella* Hübn., *Pediasia fascelinella* Hübn., *P. aridella* Thunb., *Platytus cerusella* D. & S., *Chilo phragmitellus* Hübn., *Agapeta hamana* L., *Pandemis heperana* D. & S., *Archips oporana* L., *Epiblema uddmanniana* L., *Endothenia quadrimaculana* Haw. In addition, several members have as yet unidentified 'micros'.

CLUMBER PARK AND DERBYSHIRE MOORS —

30th August-1st September 1974

Leader — Mr. T. W. HARMAN

As a prelude to the weekend Council Member, Mr. P. Baker, visited Clumber Park, Notts., where, on a warm overcast night he saw 51 species of macrolepidoptera at light, the most interesting of which were . . . *Diarsia dahlia* Hübn., *Enargia paleacea* Esp., and *Amphipyra berbera* Rungs.

He moved to Derbyshire and searched the stone walls on Beeley Moor during the day of the 30th August where he saw several interesting moorland species including . . . *Eulithis populata* L., *Lithomoia solidaginis* Hübn., *Antitype chi* L. and *Epirrita filigrammaria* H.-S.

Unbeknown to Mr. Baker two other Society Members arrived at Mr. Elliott's house and were conducted to the moors, but were unable to locate Mr. Baker — m.v. lights were therefore run independently. It was an excellent night, over 100 *solidaginis* were recorded by one party. Otherwise catches were comparable and included *Syngrapha interrogationis* L., a few *A. chi* L., *Xestia castanea* Esp., in both forms, with interesting intergrades, and a late female *Parastichtis suspecta* Hübn.

On Saturday morning, 31st August, the meeting proper began, with Mrs. E. Elliott entertaining further arrivals pending the coming of the leader, Mr. T. W. Harman, who had travelled north after just returning from Guyana, South America.

The afternoon was spent searching stone walls when further specimens of *chi*, *filigrammaria* and *solidaginis* were found. Also seen were larvae of *Macrothylacia rubi* L., *Lasiocampa quercus callunae* Palm. and one larva of *Acronicta menyanthidis menyanthidis* Esp.

Light was again run during the evening and, although rather clear and cold, it produced further specimens of moorland species mentioned earlier plus a number of *Eulithis testata* L., the moorland form surprising the southern collectors. By searching the heather bloom literally thousands of specimens of *Hydriomena furcata* Thunb. were seen in every conceivable form. Mountain ash was successfully beaten for larvae of *Venusia cambrica* Curt.

This most rewarding meeting was terminated at the home of the leader on the morning of Sunday, 1st September.

SWANAGE, DORSET — 21st September 1974

Leader — Mr. P. J. BAKER

Five members and one guest attended this meeting where rain earlier in the day gave way to drier weather, though with a persistent south-westerly wind. The storm of a fortnight earlier had left its mark and much of the vegetation, even as far inland as Corfe Castle, had been scorched by salt spray. It was found that the old military site on Durlleston Head had been tidied up and was in the process of being converted into a caravan park. This work is part of the many 'improvements' now being made as part of the creation of a Country Park — which activity will doubtless be of greater benefit to the migrant human population than the indigenous flora and fauna.

The ivy was not yet in flower around the Durlleston Head area and insects, in all stages, were very scarce during the day. At nights several lights were run and the edge of the cliffs was searched. These activities were not particularly productive and only the following Lepidoptera were recorded: *Udea ferrugalis* Hübn., *Xanthorhoe fluctuata* L., *Chloroclysta truncata* Hufn., *Opisthograptis luteolata* Hübn., *Euxoa nigricans* L., *Agrotis ipsilon* Hufn., *Xestia c-nigrum* L., *X. xanthographa* D. & S., *Mythimna l-album* L., *Leucochlaena odites* Hübn., *Agrochola lychnidis* D. & S., *Omphaloscelis lunosa* Haw., *Xanthia lutea* Strom., *Phlogophora meticulosa* L., *Luperina testacea* D. & S., *Autographa gamma* L. and *Scoliopteryx libatrix* L.

CHIDDINGFOLD, SURREY — 12th October 1974

Leader — Mr. R. F. BRETHERTON

This was an unsuccessful evening meeting to look for autumn Lepidoptera. Six members and visitors met on Chiddingfold Green at 6.00 p.m. and moved to nearby woodland. In a prolonged cold spell the night was clear and a heavy frost developed later. Only three moths appeared at sugar and hardly more at several lamps, some of which were run until about 9.30. No noteworthy species were seen.

BENFLEET, ESSEX — 3rd November 1974

Leader — Col. A. M. EMMET

The meeting, which was attended by six members and two young visitors from the Amateur Entomologists' Society, enjoyed the benefit of fine weather immediately following heavy rain. The principal object was to search for leaf-mining larvae of microlepidoptera, foremost among which was *Ectoedemia erythrogenella* de Joan., a species of the Nepticulidae added only a year earlier to the British list. The larvae mine the leaves of bramble, preferring bushes in exposed locations. The larvae were, for the most part, still very small, doubtless because they had been held back by the cold autumn weather; however they were sufficiently numerous for those which were more advanced to be selected. Gallery mines of the *aurella* group on *Rubus* were also collected in case *Stigmella auromarginella* Rich. should be found amongst them, this being a species which favours a coastal habitat. The larval cases of *Coleophora potentillae* Elisha were not uncommon on the same foodplant.

Another main quarry was *Tischeria angusticolella* Dup. which feeds on *Rosa* spp. Here again, mines were plentiful. Also on rose were tenanted mines of *Ectoedemia angulifasciella* Staint. and *Stigmella anomalella* Goeze, together possibly with *S. centifoliella* Zell. and cases of *Coleophora gryphipennella* Hübn. Hawthorn yielded *Stigmella pygmacella* Haw. in plenty, *S. oxycacanthella* Staint. and *S. hybgerella* Hübn.; the larvae of the last species constituted a third generation which occurs only seldom.

The only macrolepidopterous larvae noted with those of *Eupithecia millefoliata* Röss. on *Achillea*, a foodplant also sustaining the case-bearing larvae of *Coleophora argentula* Steph. Some of the party collected seed-heads of *Achillea*, *Daucus* and *Picris* for any Phaloniid larvae they might be harbouring.

After lunch, Mr. John Chainey, one of our visitors, took the party to a spot where he had discovered a colony of *Evergestis extimalis* Scop. Although according to the text-books the larvae feed in August, they were still to be found in this instance over two months after that date, their foodplant being wall rocket. This species provided a welcome and unexpected bonus to the activities of the meeting.

PROCEEDINGS

28th November 1974

The President, Mr. C. MACKECHNIE JARVIS, in the chair.

The following new members were declared elected: Messrs. M. C. Aldridge, H. J. Elliston, P. Kelly and P. E. Ransome.

EXHIBITS

Mr. E. S. BRADFORD—Mines in the bark of oak of *Ectoedemia atrifrontella* Staint. (Lep., Nepticulidae) from Childs Forstal Wood, East Blean, Kent, xi.74. Also, he showed specimens of *Blaps mucronata* Lat. (Col., Tenebrionidae), a large number of which were found in a cellar of an old butcher shop in Whitstable, Kent, 25.xi.74.

Mr. J. M. CHALMERS-HUNT—A living female of *Alucita hexadactyla* L. (Lep., Alucitidae), which he had taken in his house at West Wickham, Kent, 25.xi.74.

Col. A. M. EMMET—Moths reared from larvae taken in Tresco, Isles of Scilly between 14 and 21.ix.74.

(1) A specimen of *Nothris congressariella* Bruand (Lep., Gelechiidae) which emerged 11.x.74 from a larva found on *Scrophularia aquatica* L. The range of this species in the British Isles appears to be limited to the Isles of Scilly.

(2) Three specimens of *Nyteola revayana* Scop. (Lep., Noctuidae) which were of interest (a) because the larvae were feeding on holm oak (*Quercus ilex* L.) which is a hitherto unrecorded foodplant; and (b) because of the late date of the larvae, the insect being bivoltine in Scilly (as on the continent), whereas it is univoltine elsewhere in Britain.

(3) Twelve specimens of *Caloptilia leucapennella* Steph. (*sulphurella* Haw. nec F.) (Lep., Gracillariidae). These are of interest because (a) eight of the specimens are of the red form, which is not mentioned in the text-books. It is, however, well known to collectors, but considered as a rare variety. (b) The larvae were feeding on holm oak which has not previously been recorded as a foodplant. There was no trace of them on deciduous oak (*Q. robur* L.) which was growing amongst the holm oaks. (c) The life-history is almost unknown, the larvae being reputed to feed in June and July. In this instance the larvae were feeding in mid-September. Leaves of holm oak were exhibited to show the early mine on the underside of the leaf and the final cone. The pupa is in a cocoon spun either inside the cone or on the underside of a leaf.

COMMUNICATIONS

Dr. C. G. M. de Worms said that he had once observed *A. hexadactyla* flying in large numbers over a honeysuckle at Aviemore, Inverness-shire, when they had looked like a swarm of gnats.

Mr. R. L. E. Ford gave a talk entitled "Life in Wealden times with some problems of the Dinosaurs". This was followed by an interesting discussion.

12th December 1974

The President, Mr. C. MacKECHNIE JARVIS, in the chair.

EXHIBITS

THE PRESIDENT — The W. West collection of the bug *Aphrophora spurmaria* (L.) (Hem., Ceropidae) comprising 302 specimens under typical and 17 varietal names, from various localities in the United Kingdom. The collection was formed in the early years of the present century. W. West (1836-1920) was a founder member of the Society and was the first Curator of its collections from 1878 until 1920.

Mr. A. E. GARDNER — A specimen of the very local beetle *Oncomera femorata* (F.) (Col., Oedemeridae) taken at light at Shipton Gorge, Bridport, Dorset by Mr. G. S. E. Cross, 30.xi.74.

Mr. E. S. BRADFORD — Further examples of mines in the bark of oak of *Ectoedemia atrifrontella* Staint. (Lep., Nepticulidae), Ellenden Wood, near Whitsable, Kent, 1.xii.74.

Col. A. M. EMMET — Two species of *Phyllonorycter* (Lep., Gracillariidae) showing regional variation. (1) *P. heegeriella* Zell. (a) specimens from Debden, Essex, ii-iii.68, typical of the form occurring in the south of England. The ground colour of the forewings is white in the basal half and pale golden in the distal half. The blackish edging to the strigulae is conspicuous. (b) a specimen from Arnside Knott, Westmorland, 14.ii.74, typical of the form occurring in the north of England. The ground colour of the forewings is uniformly greyish fuscous and the blackish edging to the white strigulae is almost obscured. Whereas in the Essex specimens the basal streak forms a dark line, in the Westmorland specimen it appears as a white line. The explanation is that, in theory, all specimens have a white basal streak edged above with black. In the Essex specimens the white is absorbed into the white ground colour leaving only the black upper edge; in the Westmorland specimen the dark edge is absorbed into the fuscous ground colour, leaving only a white streak. (2) *P. lautella* Zell. (a) specimens from Debden, Essex, 25-26.viii.72, typical of the form occurring in England. The ground colour of the forewings is golden brown. (b) specimens from Ballynahinch, Co. Galway, 8-12.viii.72, typical of the form occurring in the west of England. The ground colour of the forewings is dark fuscous. There are similar specimens in the British Museum (Nat. Hist.) from north Wales, presented by Mr. H. N. Michaelis.

Mr. A. E. STUBBS — Publications by the Nature Conservancy concerning various habitats and a *Statement of Policies* by the Nature Conservancy Council.

COMMUNICATIONS

Col. Emmet suggested that members should have a thorough search for mines of *Ectoedemia atrifrontella* as they might be widespread. He added that his previous week's statement that holm oak had never been mentioned as a foodplant for *Caloptilia leucapennella* might not be true.

Commenting on Col. Emmet's exhibit, Mr. S. N. A. Jacobs said that he had bred the dark form of *P. lautella* from Kent, Surrey and Sussex.

Mr. M. G. Ventom had seen the small tortoiseshell (*Aglais urticae* L.) (Lep., Nymphalidae) at Barnes on 8.xii.74.

Mr. Bradford commented on the large numbers of geometrid imagines to be seen trapped on the surface of ponds. Several hypotheses were put forward by members.

Mr. E. C. M. Haes gave a talk entitled "The Habitats of Native British Orthoptera" which he illustrated with colour slides of the insects and their habitats.

9th January 1975

The President, Mr. C. MACKECHNIE JARVIS, in the chair.

The death was announced of Mr. C. A. W. Duffield.

The following new members were declared elected: Dr. A. Ballantine, Messrs. D. J. Batty, P. A. Martin and M. D. Norman.

EXHIBITS

Col. A. M. EMMET — (1) Specimens of *Acrocercops brongniardella* F. (Lep., Gracillariidae) bred, 27-28.vii.74, from larval mines in oak collected at Ashted, Surrey, 27.vi.74. The mines had been exhibited on the day they were taken. This species was formerly regarded as "not uncommon" (Meyrick, 1928), but, in recent years, it has become local and scarce.

(2) A leaf of hawthorn collected on the Society's field meeting at Benfleet on 3.xi.74 containing the feeding of five insect species: *Phyllonorycter corylifoliella* Hüb., *P. oxyacanthae* Frey, *Parornix anglicella* Staint. (Lep., Gracillariidae), *Stigmella hybnerella* Hüb. (Lep. Nepticulidae) and *Rhamphus oxyacanthae* Marsham (Col., Curculionidae).

(3) A sprig of hawthorn with green leaves of both this and last year.

Dr. C. G. M. DE WORMS — Unexpectedly early living specimens taken at light of the following: *Orthosia stabilis* D. & S. (Lep., Noctuidae) taken at Woking, Surrey, and *Agriopis leucophaearia* D. & S. ab. *marmorinaria* Esp. and ab. *merularia* Weymer (Lep., Geometridae) from Virginia Water, Surrey on the same night, 8.i.75.

Mr. A. E. GARDNER — Specimens of the beetle *Leperisinus orni* Fuchs. (Col., Scolytidae), taken in Epping Forest, Essex, 18.ix.1942, by the late Mr. H. W. Forster and found in his collection of unidentified Coleoptera. This is a new county record and the specimens are being added to the Dr. A. M. Massee collection. Specimens of *L. fraxini* (Panz.) were shown for comparison and the differences discussed.

Prof. J. A. OWEN — Specimens of *Octhebius lenensis* Poppius (Col., Hydrophilidae) from a salt marsh at Ardersier, Inverness-shire, iv.73. He showed a map demonstrating the known sites of this beetle around Inverness and added that its only other known distribution was in northern Norway.

Dr. M. G. MORRIS — A living larva and set adult of the 'Fly Bug', *Reduvius personatus* (L.) (Hem., Reduviidae). The larva was found in a house in Eltisle, Cambs. and given to the exhibitor on 3.xii.74. The adult was taken in Cambridge, vii.1946, probably by Dr. R. M. Greenslade, from whose collection it comes. This is a bug which lepidopterists may well have noticed from time to time as it comes readily to light. The larvae inhabit houses and are predacious on small insects and arachnids. They cover themselves with dust as a means of concealment.

Mr. S. E. WHITEBREAD — Details of the Lepidoptera recording scheme for Kent, including information for recorders and a record card to show how information supplied by recorders is held at the Maidstone Museum. (Additional dates and information are held in a separate species file containing the detailed records and tetrad map.)

A survey of the Lepidoptera of Hothfield Common Nature Reserve is being conducted by the exhibitor between April 1974 and April 1975. Visits in May, June, August and November have provided 160 new records for the Reserve, with about 50 species awaiting positive identification. This brings the total records for the Reserve to 380 species.

Mr. G. PRIOR — A live specimen of *Caradrina clavipalpis* Scop. (Lep., Noctuidae) taken in a house in Harrow, Middx., 6.i.75.

Mr. T. G. HOWARTH — A collection of butterflies from Korea which had previously been exhibited, but were shown again in view of the topic for the meeting's talk.

COMMUNICATIONS

Mr. P. J. Baker said that the mild winter so far had led to his capture of the following spring imagines at Thorpe, Surrey: *Agriopsis leucophaearia*, 26.xii.74, *Theria rupicapria* D. & S., 28.xii.74 and *Apocheima pilosaria* D. & S. (Lep., Geometridae). Dr. de Worms had taken *A. leucophaearia* at Woking, 30.xii.74 and Mr. S. A. Knill-Jones had taken it the next day at Freshwater, Isle of Wight. Col. Emmet had heard from Mr. J. Heath that *Aglais urticae* L., *Inachis io* L. (Lep., Nymphalidae) and *Gonepteryx rhamni* L. (Lep., Pieridae) had been flying at Monks Wood, Hunts. in late December 1974. Dr. P. A. Boswell had seen red campion, foxglove and wild strawberry in flower at Sarne, Montg., 29.xii.74.

Mr. E. H. Wild had found a larva of *Helicoverpa amigera* Hübn (Lep., Noctuidae) in a Spanish tomato, 26.xii.74, but a search of a further 150 in the greengrocer's dustbin the next day had produced no more.

Commenting on Col. Emmet's exhibit of *A. brongniardella*, Mr. J. M. Chalmers-Hunt said that he had never taken the species, but the late Mr. F. A. Swayne had found its larvae in oak in a garden in Orpington, Kent about ten years ago. Rev. D. J. L. Agassiz remembered that Mr. R. W. J. Uffen had found the larvae quite common in the Wye Valley in the early 'sixties. Mr. S. N. A. Jacobs had known it in the Limpsfield Chart area until two years ago.

Mr. Jacobs remembered having been painfully bitten by *R. personatus* and Dr. Morris added that *Notonecta* spp. could do the same.

A talk entitled "An Entomologist in Korea" was given by Mr. P. E. S. Whalley.

FIELD MEETINGS AND THE FUTURE

Older members cannot fail to have noticed the change in the pattern of our Field Meeting venues over the last two years, and for the most part comment has been favourable. In 1954, for example, 23 of the meetings were in the Home Counties and only two were outside (Northants. and Bucks.). All were one day meetings with no provision for night work. Last year there were only six in the Home Counties to ten more distant ventures and this year the odds were eight to ten, with most of the long trips arranged as two day affairs with a night meeting as a major part of the exercise.

There are several reasons for this change. The earlier programmes were well suited to the old South London but the British needed to widen its field and your Council agreed that more opportunities should be given to country members to participate and, where possible, to form local branches, each of which could organise a field meeting in their area. The counties round London are so well worked by the very large number of members running m.v. traps, that two or three years will suffice to build up a fairly representative idea of the local Lepidoptera (at least of the 'macros') though the discovery of *Gortyna borelii* Pierret and *Xanthorhoe biriviata* Borkh. should warn us that there is still much to learn.

Present day mapping schemes show so many areas not properly explored and it is hoped that members moving into such areas or living within striking distance will offer to lead meetings in such places to fill up blank spaces on the map. Such areas can be worked in different months in successive years. Workers in other Orders, especially Diptera and Trichoptera, may find many useful surprises in the lepidopterists' traps if they join them for night meetings.

Making up a fixture list is a long and complex affair and I find that few members volunteer to lead a meeting until they are asked. New leaders and new localities will be needed for 1976. If you can help please write before the end of October or contact me at the dinner or exhibition.

E. H. WILD

Honorary Field Meetings Secretary

THE PROFESSOR HERING MEMORIAL RESEARCH FUND

The British Entomological and Natural History Society announces that awards may be made from this Fund for the promotion of entomological search with particular emphasis on

- (a) Leaf miners,
- (b) Diptera, particularly Trypetidae and Agromyzidae,
- (c) Lepidoptera, particularly micro-lepidoptera,
- (d) General entomology,

in the above order of preference, having regard to the suitability of candidates and of the plan of work proposed.

Awards would be made to assist travelling and other expenses necessary for field work, for the study of collections, for attendance at conferences, or, exceptionally, for the costs of publication of finished work. In total, they are not likely to exceed £150 in 1975/76.

Applicants need not be resident in the United Kingdom, and research in any part of the world may qualify.

Applicants should send a statement of their qualifications, of their plan of work, and of the precise objects and amount for which an award is sought, to R. F. Bretherton, C.B., M.A., F.R.E.S., Hon. Treasurer, Folly Hill, Birtley Green, Bramley, Guildford, Surrey GU5 0LE, as soon as possible and **in any case not later than 30th September 1975.**

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MEETINGS OF THE SOCIETY

are held regularly at the Society's Rooms, but the well-known ANNUAL EXHIBITION takes place in the autumn in external accommodation. Frequent Field Meetings are held at weekends in the Summer. Visitors are welcome at all meetings. The current Programme Card can be had on application to the Secretary.

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AUGUST 1975

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A PRELIMINARY LIST OF THE NEPTICULIDAE OF IRELAND

by A. M. EMMET

(Labrey Cottage, Victoria Gardens, Saffron Walden, Essex)

The purpose of this list of the Nepticulidae of Ireland is not only to enumerate the species which have already been recorded, but also to draw attention to the many gaps in our information in the hope that entomologists will be encouraged to fill them. Beirne (1941: 133) wrote of the Nepticulidae, 'Very little is known of the distribution in Ireland of the species of this group, and the fact that so few species have been recorded must not be taken as evidence of the paucity of the Irish fauna, as doubtless many species remain to be discovered'. He listed 17 species, but two of these (*gratiosella* Duponchel and *ignobilella* Stainton) are now regarded as a single species under the name *hybnerella* Hübner, while another (*subbimaculella* Haworth) may refer to other species in its group and is here regarded as provisional. This leaves us with 15 species, to which Burren collectors added nine (Bradley and Pelham Clinton, 1967) and my second list for West Galway (Emmet, 1971) another five, two of which were then provisional. The literature, therefore, gives us 27 confirmed species which the present list raises to 43 together with four provisional species. This figure for the whole of Ireland should be compared with the 100 species found in the British Isles and the 73 recorded in the small county of Dorset. There are, in fact, 22 English vice-counties with a higher tally of Nepticulidae than all Ireland.

Though there are almost certainly fewer species of Nepticulidae in Ireland than in Britain, there are still many to be discovered. This applies in particular to the univoltine species feeding in the autumn, a season not covered by my own recording and one in which I would expect to make about ten additions to the list in any of the vice-counties with which I am familiar. There are, moreover, large tracts of the country which are completely unexplored. No Nepticulidae at all are recorded from 18 of the 40 vice-counties and among these are all the six counties of the North.

The earliest records date from the middle of the last century and are mainly concerned with Cos Dublin and Wicklow. These records, scattered in the literature, were collated by Beirne (1941), who added some records of his own. Then came the Burren boom with records from Co. Clare soon outnumbering those from all other counties. This was followed by my own interest in the family with new records, at first confined to West Galway, where I stay, but extended in 1973 and 1974 to adjacent counties and those we traversed in our journeys from England — via Dublin in 1973 and Cork in 1974. In the latter year, my wife and I more than doubled the national total of vice-county records, so easily are they made once you have mastered your minology.

The following list of vice-counties with the number of Nepticulidae recorded from them is intended to help entomologists to recognise where their efforts will be best rewarded. After each vice-county, its abbreviation as used by Beirne (1941) is given, as they will feature in the list, being more readily recognisable than the numbers.

<i>Vice-county</i>	<i>Number of Nepticulidae recorded</i>
H 16 West Galway (WG)	26
H 9 Clare (CL)	25
H 1 South Kerry (SK)	23
H 15 South-east Galway (SG)	19
H 3 West Cork (WC)	18
H 4 Mid Cork (MC)	18
H 2 North Kerry (NK)	17
H 26 East Mayo (EM)	16
H 17 North-east Galway (NG)	12
H 8 Limerick (LK)	11
H 10 North Tipperary (NT)	10
H 21 Dublin (DU)	10
H 27 West Mayo (WM)	9
H 20 Wicklow (WI)	7
H 23 West Meath (WH)	5
H 25 Roscommon (RO)	5
H 18 Offaly (OF)	4
H 5 East Cork (EC)	1
H 7 South Tipperary (ST)	1
H 12 Wexford (WX)	1
H 19 Kildare (KD)	1
H 33 Fermanagh (FE)	1
Remaining 18 vice-counties	0

In the list, the nomenclature used is that of the Second Edition of Kloet & Hincks' Check List of British Insects (Part II: Lepidoptera) as amended in *Ent. Gaz.* 25, 219-223 with the exception that the distinction between *Stigmella* and *Nepticula* is no longer observed, the two being treated as a single genus under the name *Stigmella*. The order of genera and species has also been altered to conform with the rearrangement made by Borkowski (1972).

After the name of each species, the foodplants recorded in Ireland are given, together with the usual dates for the occurrence of the larvae. Then follow the records for vice-counties given in their numerical sequence. In the case of ubiquitous insects, the vice-county abbreviation is given without qualification, details of the locality being added only for those with a more restricted occurrence. After each county, or group of counties, the first authority is named, except that the records collated by Beirne (1941) and Bradley & Pelham-Clinton (1967) are usually referred simply to those authors unless there is a reason for citing the sources they followed. Where reference is made to published records, the date following the author's name is in heavy type (e.g. Emmet: 1971); where the record has not previously been published, the authority is followed by the date in lighter type (e.g. Emmet: 1974). Square brackets are used for records requiring confirmation.

Bohemannia quadrimaculella Boheman. Life history unknown, but associated with *Alnus*, the imago flying in July. SK. Dromore; NK. Kenmare

Desmesne; WI. Kilmacanogue (Beirne, 1941). Possibly widespread among alders.

Ectoedemia rubivora Wocke. On *Rubus* spp., x. CL. Doughbranneen, mines on *R. saxatilis* L.; moths bred (Bradley & Pelham Clinton, 1967). In England the usual foodplant is *R. caesius* L.

E. argentipedella Zeller. On *Betula*, ix-x. WG, Ardbear and Ballynahinch (Emmet: 1971); DU, Howth (Beirne: 1941). Possibly widespread among birches.

E. mediofasciella Haworth (*woolhopiella* Stainton). On *Betula* and, exceptionally, *Corylus*, vii-viii. SK, Killarney, where it was feeding on both foodplants (Emmet, 1974); MC, Ballingeary (Emmet, 1974); WB, Ballynahinch (Emmet, 1973: 283). A local species, possibly widespread.

[*E. subbimaculella* Haworth. On *Quercus*, x-xi. NI, Cahernane; ST, Clonmel; KD, Carton Desmesne; WI, Glen of the Downs and Kilruddery (Beirne: 1941). These records testify to the presence of at least one member of the *submaculella* group in Ireland (*albifasciella* Heinemann, *quercifoliae* Toll and *subbimaculella*). At the time when Beirne wrote, *quercifoliae* had not been recognised as British. His genitalia figure of *subbimaculella* shows *quercifoliae* and that of *E. argyropeza* Zell shows *albifasciella* (Beirne: 1945); so, clearly, his determinations in this and related groups was uncertain. The distribution of these species in Britain shows that both *albifasciella* and *quercifoliae* are likely to occur in Ireland, but *subbimaculella* is less likely to do so.]

E. pulverosella Stainton. On *Malus*, vi-vii. SK; NK; WC; MC; LI; CL; NT; SG (Emmet, 1973-1974); WG (Emmet, 1971); NG, EM (Emmet, 1974). Abundant wherever the foodplant, wild or cultivated, occurs.

Fomoria septembrella Stainton. On *Hypericum*, vii and ix-xii. CL, Doughbranneen, several adults taken by sweeping; a distinctive form possibly constituting a subspecies (Bradley & Pelham-Clinton, 1967); DU, 1866 (Beirne, 1941). I have repeatedly searched for the conspicuous mines of *septembrella* on *Hypericum* spp. in all the western counties within my ambit, but without success; there is a possibility, therefore, that the Burren form has a different foodplant or even that it is a distinct species.

Trifurcula griseella Wolff. Foodplant unknown. CL, Caher River, adults taken by sweeping (Bradley & Palham-Clinton, 1967). This species, which is widespread on chalk and limestone in Britain, may prove to have a similarly extensive range in Ireland.

T. immundella Zeller. On *Sarothamnus*, x-iii. NK, Muckcross; WI, Glen of the Downs (Beirne, 1941).

Levarchama cryptella Stainton. On *Lotus corniculatus* L. and *L. uliginosus* Schkuhr, vii. WG, Ballynahinch, in woodland, the usual habitat of this species. Mines in July, 1973 and 1974 yielded adults in April, 1974 and 1975. New to Ireland (Emmet, 1973-1974).

L. eurema Tutt. On *Lotus corniculatus*, ix. CL, Caher River and Rinnamonagh Lough, mines from which moths were bred (Bradley & Pelham-Clinton, 1967).

Stigmella aurella Fabricius. On *Rubus* spp. and possibly also on *Agrimonia* and *Fragaria*, mainly vii and (on *Rubus fruticosus* L.) x-iv. SK; NK; WC; MC; ST; LI; CL; NT; WX; SG; WG; NG; OF; KD; WI; DU; WH; RO; EM; WM; FE (Beirne, 1941; Bradley & Pelham-Clinton, 1967; Emmet, 1968 and 1973-1974). Common everywhere.

S. fragariella Heyden. On *Agrimonia*, *Fragaria* and *Rubus* spp. vii and ix-x. Probably distinct from the preceding species; it overwinters in the cocoon

and not the mine, the head of the insect is often blackish especially in the generation emerging in the spring, the gold fascia is paler and the basal area of the forewing is metallic green rather than metallic purple. WC, Glengarriff, mines on *Rubus idaeus* L., moths bred; LI, Limerick, an adult boxed on a leaf; SG, Funshin More, mines on *Agrimonia*; WG, Cornamona, mines on *Agrimonia*, moths bred; NG, mines on *Agrimonia* (Emmet, 1974). New to Ireland.

S. dulcella Heinemann. On *Fragaria* and *Rubus* spp. vii and ix-x. Probably distinct from the two preceding species; it overwinters in its cocoon, the adult is smaller, the fascia paler and there is not much difference in colour between the basal and apical areas of the forewings. SK; NK; WC; MC, mines on *Fragaria* and *Rubus*, moths bred (Emmet, 1973). New to Ireland. *S. auromarginella* Richardson. On *Rubus* spp. mainly vii and x, but more or less continuous-brooded. CL, Ballynalackan coast, a mine on *Rubus saxatilis* L. from which the adult was bred (Bradley & Pelham-Clinton, 1967); SK, Funshin More, mines on *Rubus fruticosus* L., the moths bred (Emmet, 1974).

S. splendidissimella Herrich-Schäffer. On *Rubus* spp. vii and x. CL, Burren (various localities), mines on *Rubus saxatilis*, *R. fruticosus* and *R. idaeus*; no moths bred (Bradley & Pelham-Clinton, 1967). Though these records are likely to be correct, they cannot be accepted without reservation. The mines of *splendidissimella* are long and narrow, with a fine central line of frass; however, *S. fragariella* Heyden has a similar mine-form, considered by some collectors to be a distinct species. viz. *S. nitens* Fologne. The mines from WC which I had expected to yield *splendidissimella* turned out to be *fragariella* (or *nitens*). WI, Bray Head (Beirne, 1941).

S. dryadella Hofmann. On *Dryas octopetala* L., vii and ix-x. Abundant in the Burren. CL (Bradley & Pelham-Clinton, 1967); SG (Emmet, 1974).

[*S. tormentillella* Herrich-Schäffer. On *Potentilla erecta* (L.) Räuschel. CL, Burren, supposed mines from which no moths were bred (Mere, 1966). There is, however, no reliable evidence for the occurrence of this species in the British Isles.]

S. serella Stainton. On *Potentilla erecta*, vii and ix. CL, Burren, Caher River, mines and adults; Rinnamona Lough, mines (Bradley & Pelham-Clinton, 1967); Caher River, mines from which moths were bred (Emmet, 1973); WG, Ballynahinch and Clifden, mines from which moths were bred (Emmet, 1973 and 1974). The Ballynahinch mines collected in July 1974 produced six adults in August 1974, and seven in May and June 1975.

S. marginicolella Stainton. On *Ulmus*, vi-vii and ix-x. SK; NK; WC; MC; LI; NT; SG; WG (Emmet, 1974); DU (Beirne, 1941); EM (Emmet, 1974). Though widespread, it does not appear to be numerous in any of its localities.

S. sorbi Stainton. On *Sorbus aucuparia* L., vi. SK; WC; MC; CL, Bally-eighter Wood; WG (Emmet, 1973-1974); WI (Beirne, 1941). Probably occurs wherever the foodplant is common.

S. plagicolella Stainton. On *Prunus* spp., vi-vii and ix-xi. SK; NK; WC; MC; LI (Emmet, 1974); CL (Bradley & Pelham-Clinton, 1967); NT; SG; WG; NG (Emmet, 1973-1974); DU (Beirne, 1941); WH; RO; EM; WM (Emmet, 1973-1974). Widespread though not numerous.

S. salicis Stainton. On *Salix* spp., especially *S. aurita* L. in the west, vii and ix-xi. SK (Bradley); NK; WC; MC; LI (Emmet, 1974); CL, Burren (Bradley & Pelham-Clinton, 1967); NT; SG (Emmet, 1974); WG (Emmet, 1968); NG; EM; WM (Emmet, 1974). Widely distributed and often very common,

preferring low growth in damp localities. [It is now known that two species are embraced under what was formerly understood as *S. salicis*, the second being *S. auritella* Skala. Probably both species occur throughout the range given above, but *auritella* appears to be the more common.]

S. myrtillella Stainton. On *Vaccinium myrtillus* L., vii and ix-x. SK, tenanted mines beside the Glengarriff-Kenmare road, just north of the tunnel (Emmet, 1974). New to Ireland.

S. floslactella Haworth. On *Corylus*, vi-vii and ix-x. SK; NK; WC; MC; LI (Emmet, 1974); CL, Burren (Bradley & Pelham-Clinton, 1967); SG (Emmet, 1973); WG (Emmet, 1971); NG; WH; EM; WM (Emmet, 1973-1974). Occurs commonly wherever the foodplant is found.

S. tityrella Stainton. On *Fagus*, vi-vii and ix-x. SK; NK; WC; MC; LI; NT; SG; WG; NG; EM (Emmet, 1974). New to Ireland. Common in most places where there are beeches.

S. pygmaeella Haworth. On *Crataegus*, vii and x. CL, Boulevan (Burren), three specimens netted at dawn on 31.v.71 by Mr. E. C. Pelham-Clinton; they are now in my collection. The determination appears to be correct, but I have failed to find mines of this species either in the Burren or elsewhere in the west of Ireland. Possibly it is univoltine in Ireland with larvae feeding only in the autumn: in England it is bivoltine. This is the only record in Ireland.

S. hemargyrella Kollar. On *Fagus* vi-vii and ix. SK; NK; WC; MC (Emmet, 1974); EC (Pelham-Clinton); NT; SG; WG; NG; EM (Emmet, 1974), New to Ireland, Mr. Pelham-Clinton's records being the earliest. Common in most places where there are beeches, but apparently less common than *S. tityrella* Stainton in Cos Galway and Mayo.

S. paradoxa Frey. On *Crataegus*, vi-vii. CL, Burren, Emmet, 1970, 1971 and 1973); EG, Burren; WG and NG, on the shores of Lough Corrib (Emmet, 1974). Moth bred. All these localities are on limestone.

S. atricapitella Haworth. On *Quercus*, vi-vii and ix-xi. SK, Killarney; WG, Ballynahinch and Clifden (Emmet, 1974). These records are based on bred imagines and confirm my provisional record based on mines (Emmet, 1971). Though I have not admitted mines as evidence in recording this group, the characteristic patterns of the species are becoming clearer and I feel certain that *atricapitella* is the most common.

S. ruficapitella Haworth. On *Quercus*, vi-vii and ix-x. SK, Killarney, a bred imago (Emmet, 1974); [WG, Ardbear and Ballynahinch, mines and an adult captured in 1970 at Ballynahinch (Emmet, 1971). Since I did not retain the specimen and the distinction between *ruficapitella* and *S. roborella* Johansson had not been published, the record is invalid. Nevertheless, I see no reason to doubt the evidence of the mines]. Probably widespread, but apparently less common than *atricapitella*.

[*S. roborella* Johansson. On *Quercus*, vi-vii and ix-xi. SK and WG, mines. This species makes a small mine with a thinner line of frass than the other members of the group. Mines with these characters occur and indicate the probable presence of *roborella*. It is a common species in Britain.]

S. anomalella Goeze. On *Rosa* spp., vi-vii and ix-xi. SK; NK; WC; MC; CL; NG (Emmet, 1973-1974); WG (Emmet, 1971); NG (Emmet, 1974); WI; DU (Beirne, 1941); EM (Emmet, 1974). Seems to be common everywhere.

S. spinosissimae Waters. On *Rosa pimpinellifolia* L., vii and ix-x. CL, Burren (Bradley & Pelham-Clinton, 1967); SG, Burren (Emmet, 1974). Locally abundant. I have bred the moth from both counties.

S. malella Stainton. On *Malus*, vi-vii and ix-x. DU, recorded by Stainton

(Beirne, 1941). Though I have searched diligently, I have found no trace of its mines in the west and south-west.

S. hybnerella Hübner. On *Crataegus*, v-vi, vii-viii and, occasionally, x. SK; NK; WC; NC; LI; CL; NT; SG (Emmet, 1973-1974); WG (Emmet, 1971); NG; OF (Emmet, 1973-1974); DU (Beirne, 1941; Emmet, 1964); WH; RO; EM; WM (Emmet, 1973-1974). Common everywhere. Beirne's records for *ignobilella* Stainton and *gratiosella* Stainton may safely be ascribed to this species.

S. oxyacanthella Stainton. On *Crataegus*, ix-x [WG (Emmet, 1971)]; DU, Coolock: Hogan 1855; [Howth: Birchall 1866] (Beirne, 1941). For many years the larva of *S. crataegella* Klimesch which feeds in July and August was thought to be a first generation of *oxyacanthella*, whose larva feeds in September and October; Stainton (1855) himself falls into this error. My own West Galway record certainly refers to *crataegella* and Birchall's undated record from Howth may also do so. Hogan found larvae feeding in October and his record is therefore accepted. It may well be that *oxyacanthella* is widespread in Ireland. In Britain it feeds on *Pyrus*, *Malus*, *Sorbus* and *Cotoneaster frigidus* as well as *Crataegus*.

S. aucupariae Frey. On *Sorbus aucuparia* L., vii. SK (Emmet, 1974); WG (Emmet, 1971); EM; WM (Emmet, 1973-1974). Probably common wherever the foodplant is plentiful. Moths bred.

S. nylandriella Tengström. On *Sorbus aucuparia*, vii. SK, Killarney, tenanted mines, 1974; WG, Ardbear, Ballynahinch etc., tenanted mines, 1973 yielding imagines in May 1974 (Emmet, 1973-1974). New to Ireland. Apparently less common and more restricted in range than *aucupariae*.

S. crataegella Klimesch. On *Crataegus*, vii-viii. NK; MC; CL; NT; SG; WG; NG; OF; KD; WH; RO; EM; WM (Emmet, 1973-1974). Abundant except in south-west, where it appears to be scarce or absent. New to Ireland.

[*S. betulicola* Stainton. On *Betula*, vi-vii and ix-xi. CL, Boulevan (Burren), vacated mines (Emmet, 1971); WG, Ballynahinch, vacated mines (Emmet, 1970-1973). Though these records are probably correct, confirmation by observation of the larva, which is distinctive, or the imago is desirable. In England the first generation is relatively scarce and seems to be absent in some years, and if the same applies in Ireland, it explains the difficulty in finding mines during a summer visit.]

S. microtheriella Stainton. On *Corylus*, vi-vii and ix-xi. SK; NK; WC; MC; LI (Emmet, 1974); CL, Burren (Emmet, 1971); SG (Emmet, 1974); WG (Emmet, 1971); NG, EM (Emmet, 1974). Common and widespread, occurring, in all probability, wherever the foodplant is plentiful.

S. luteella Stainton. On *Betula*, vii-xi. CL, Boulevan (Burren), one tenanted mine taken in viii.69 yielding an imago in 1970, now in the British Museum (Natural History) (Emmet, 1971). The peak period for the mines is October and autumn collecting might reveal that this species is widespread.

S. lapponica Wocke. On *Betula*, vi-vii. SK; NK (Emmet, 1974); WC (Pelham-Clinton, 1966); MC; CL, Boulevan, 1969: Ballyeigher Wood 1973, moths bred 1974; SG; WG, Ballynahinch 1973, moths bred 1974; RO; EM; WM (Emmet, 1969-1974). Common in most localities where birch grows freely.

S. confusella Wood. On *Betula*, vii. SK; NK; WC; MC; CL, Ballyeigher Wood 1973, moths bred 1974 (Emmet, 1973-1974); WG, Ardbear and Ballynahinch (Emmet, 1971), moths bred 1974; RO; EM; WM (Emmet, 1973-1974). Occurs a little later than *lapponica*, being equally common.

Johanssonia acetosae Stainton. On *Rumex acetosa* L. and *R. acetosella* L., v-vi, vii-viii and ix-x. SK, Sleah Head (Pelham-Clinton, 1966); WI, Bray 1878; DU, Howth 1853 and 1866 (Beirne, 1941). Howth is the type locality for this species.

There are over 50 species occurring in Britain which have not yet been recorded from Ireland or have records which need confirmation. To help collectors to look for them, they are listed below under their foodplants. After each name appears the letter (a), (b) or (c); these categories are as follows:

- (a) Species likely to be found in Ireland.
- (b) Species possibly occurring in Ireland.
- (c) Species unlikely to be found in Ireland.

In the interests of brevity, generic and authors' names are omitted.

Acer spp. — *spendarni*(b); *decentella*(b); *speciosa*(c); *aceris*(c).

Agrimonia — *agrimoniae*(c); *aeneofasciella*(b); *nitens*(a), but its status as a species is doubtful.

Alnus — *glutinosae*(a); *alnetella*(a).

Betula — *continuella*(b); *distinguenda*(b); *betulicola*(a).

Crataegus — *atricollis*(a); *regiella*(b).

Filipendula — *filipendulae* (on *F. vulgaris* Moench)(c); *ulmariae* (on *F. ulmaria* (L.) Maximowicz)(c).

Fragaria — *arcuatella*(b); *aeneofasciella*(b).

Geum — *gei*(a), but its status as a species is doubtful.

Malus — *atricollis*(a); *pomella*(b); *desperatella*(c).

Populus spp. — *argyropeza*(b) and *assimilella*(b) on *P. tremula* L.; *turbidella*(c) on *P. canescens* (Aiton) Smith; *trimaculella*(a) on *P. nigra* L.

Potentilla — *arcuatella*(b); *aeneofasciella*(b).

Poterium — *poterii*(b).

Prunella — *headleyella*(c).

Prunus — *spinosella*(c); *prunetorum*(c).

Pyrus — *atricollis*(a); *minusculella*(c); *pyri*(c).

Quercus — *quinguella*(c); *albifasciella*(a); *subbimaculella*(b); *quercifoliae*(a); *atrifrontella*(c); *roborella*(a); *svenssoni*(b); *basiguttella*(c).

Quercus ilex L. — *suberivora*(c).

Rhamnus — *catharticella*(b).

Rosa spp. — *angulifasciella*(a); *centifoliella*(a).

Rubus spp. — *erythrogenella*(b); *tengströmi*(c).

Salix spp. — *intimella*(b); *obliquella*(b).

Sorbus spp. — *torminalis*(c).

Tilia — *tiliae*(c).

Ulmus — *viscerella*(a); *ulmivora*(a).

Vaccinium vitis-idaea L. — *weaveri*(a).

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EMERGENCE PERIOD OF THE MEADOW BROWN BUTTERFLY (*MANIOLA JURTINA* L.)

Cribb (1975) has drawn attention to this species' three month emergence period and the possibility that early and late breeding clones may develop within it. The problem relates also to other species of the genus. But *M. jurtina* in this country can survive for 3-4 weeks, as shown by marking experiments, so that clear differentiation of such races is unlikely, e.g. middle-period males could mate with both later and earlier period females.

The underside spotting is known in some areas to vary in the female as the season progresses. Thus, in a locality in Kent in 1955-1960, this change occurred, though a similar locality two miles away did not show it. The data has been summarised in Creed *et al.* (1959 and 1962).

J. F. D. Frazer

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**THE EARLY STAGES OF *GIMNOMERA TARSEA* FALLÉN
(DIPTERA, SCATOPHAGIDAE) NOW ESTABLISHED TO
DEVELOP IN THE SEED CAPSULES OF *PEDICULARIS* SPECIES
(SCROPHULARIACEAE)**

by PETER J. CHANDLER

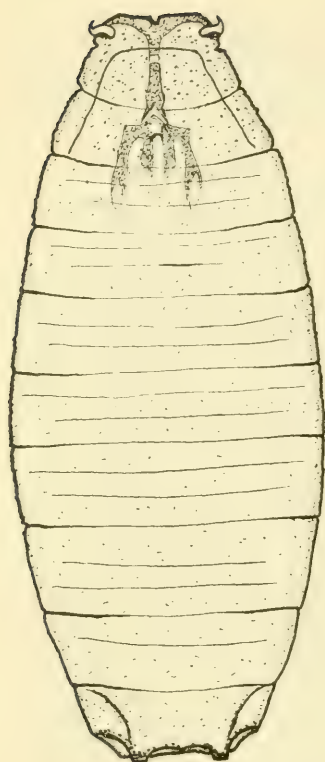
(Weston Research Laboratories, 644 Bath Road, Taplow, Maidenhead,
Berks.)

The small shining brown Scatophagid fly *Gimnomera tarsea* Fallén is not commonly collected in the British Isles, most records being from Scotland. Collin (1958) mentioned that he had taken it in the Norfolk Broads area but I know of no other English records. The few old Irish records are given by Chandler (1974). It appears most at home on bog and moorland, which might account for its apparent absence from the south. In Northern Europe it is more common and there are two other species of the genus in Scandinavia, while *G. tarsea* is the only *Gimnomera* to occur here.

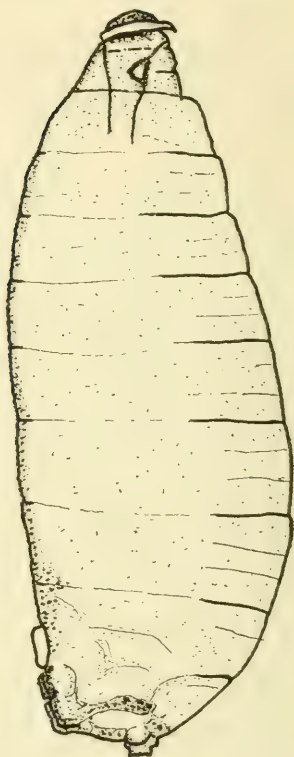
The closely related species *G. hirta* Hendel was recorded by Rydén (1933) to develop in the flowers of *Pedicularis sceptrum-carolinum* Miquel in Sweden. Then Neff (1968) gave an interesting account of the habits and development of two North American species, *G. cerea* Coquillett and *G.* (now classified in *Acerocnema*) *incisurata* Malloch. The first of these develops within the seed capsules of *Pedicularis canadensis* L., while the second develops in the flower parts of three species of *Penstemon*, another genus of Scrophulariaceae. This group thus differs from most plant feeding Scathophagidae in attacking Dicotyledons and Neff (*op. cit.*) suggested that this adaptation originated through the hemiparasitism of species of *Pedicularis* on Monocotyledons, such as grasses and sedges. This would not, however, account for such species as *Norellia spinimanum* Fallén feeding in *Rumex* and *Hydromyza livens* F. in Nymphaeaceae.

Because of these observations on foreign species of *Gimnomera*, it seemed likely to me that our own *G. tarsea* might have similar habits although no evidence had till now been forthcoming. There are two British species of *Pedicularis*, the annual red rattle or marsh lousewort (*P. palustris* L.) and the less conspicuous but perennial common lousewort (*P. sylvatica* L.), both of them growing in marshy places, especially on acid soils. Although both occur throughout the British Isles they are common only in the west and north, *P. palustris* especially being very local in the south-east and midlands. Both are probably declining wherever 'improvements' in drainage are progressing, only holding their own on upland moor and bog.

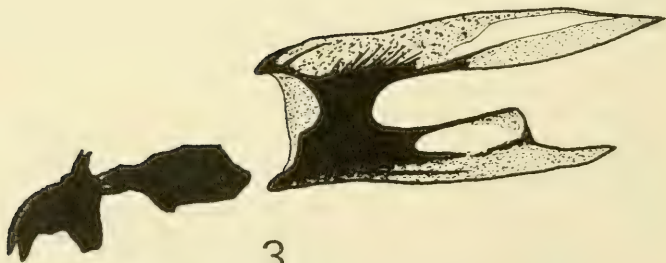
Whenever the opportunity has arisen during the past five years I have searched flowering colonies of *Pedicularis* both on the wet heaths and bogs of south-west Surrey and in similar situations in Ireland but did not find *Gimnomera* in these localities. Knowing that the fly had been most frequently collected in Scotland I made a special search near Loch Tromlee, Argyllshire on 9th July 1974 when flowering *P. palustris* was plentiful on boggy ground by an open streamside. I had practically given up hope of finding the species after half an hour's sweeping, when a single female *G. tarsea* appeared in the net. Having established that the insect was present in the locality, I then proceeded to examine the plant, on some of which



1



2



3

freshly developed seed capsules were apparent. After breaking open several of these capsules, I was delighted to find a single small white larva within one of them and I was certain that the larva must belong to *Gimnomera*. A batch of stems bearing seed capsules at a similar stage of development was then collected in the hope of rearing the fly.

During the remainder of my stay in Scotland I was able to investigate two further localities where *Pedicularis* was present. On the ascent of Ben Lui, Argyllshire on 13th July, just within the National Nature Reserve boundary, a male *G. tarsea* was swept in an area where *P. sylvatica* was growing commonly but no *P. palustris* was apparently present. The finding of a male can probably be attributed to the higher altitude delaying the flight period to some extent. Neff (*op. cit.*) found in the case of *G. cerea* that only females were obtainable for the greater part of the flight period and he suggested that males might fall prey to the highly predatory females. Finally, on 14th July at Loch Alvie, Inverness, a few females of *G. tarsea* were swept from *P. palustris* by Mr. R. W. J. Uffen and myself on boggy ground by the shore of the Loch.

The seed capsules of *P. palustris* collected at Loch Tromlee were brought home in a polythene bag and in a few days several white larvae had appeared on the inside of the bag. Some were preserved while the remainder were allowed to pupate. The larval and pupal characters were found to closely resemble the corresponding stages of *G. cerea* as illustrated by Neff and there appeared no doubt that they belonged to *G. tarsea*. This was confirmed when a male fly emerged rather prematurely on 21st November 1974 and two females have now emerged during early February 1975. An agromyzid puparium was also obtained from the seed capsules and this presumably belongs to *Phytomyza tenella* Meigen, a species known to have this habit, of which Spencer (1972) quoted only three records, two from Scotland and one from Ireland.

The early stages of *G. cerea* and *Acerocnema incisurata* as figured by Neff (*op. cit.*) are extremely similar to each other and there appear to be no very significant characters by which those of *G. tarsea* may be separated from them. In the degree of sclerotisation of the larval mouth-parts it resembles *A. incisurata* more closely than it does *G. cerea* but the extent of this varies in the limited material available and it is difficult to assess the extent of infraspecific variation in this character. The figure (3) of the larval mouth-parts (in lateral view) shows them macerated with the posterior portion separated; Neff's figures show this portion articulating with the anterior portion, obscuring the separate nature of these parts. The reddish or yellowish brown puparium (length a little over 3.5 mm.) is figured (1 and 2) in dorsal and lateral view.

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PROCEEDINGS

23rd January 1975

103rd ANNUAL GENERAL MEETING

(with which was combined the Ordinary Meeting)

The President, Mr. C. MacKECHNIE JARVIS, in the chair.

The death was announced of Mr. W. H. Storey.

The following new members were declared elected: Messrs. R. P. Bateman, E. C. M. Haes and H. F. C. Halahan.

EXHIBITS

Dr. B. J. MacNULTY — Set specimens of *Archinemapogon laterella* Thunb. (Lep., Tineidae), bred from a soft white bracket fungus growing on birch, collected at Rannoch, Perth., viii.73. The moths emerged between late v.74 and middle vi.74. They rest on the fungus and, when disturbed, are reluctant to fly, preferring either to run round to the other side of the fungus or to drop off. The moth is usually reported as feeding in the hard black fungus on birch, that has already been attacked by the beetle *Boletophagus reticulatus* (L.) (Col., Tenebrionidae). I have indeed bred the odd specimen from this habitat, but the softer fungus is obviously preferred.

Mr. R. P. BATEMAN — Males, females and nymphs of the House-cricket (*Acheta domesticus* L.) (Salt., Gryllidae) found at the original Bucks. vice-county locality — Beaconsfield and Gerrards Cross rubbish dump. They were found as C. 9th instar nymphs and the adults have come through in an environment similar to that in which they are exhibited, at a temperature of 35°C. The females lay up to 1,000 eggs in moist peat and may be fed on almost any household scraps. When captured, xii.74, nymphs of all stages and adult females were to be found, kept alive by the heat of decomposing waste: during a severe winter however, only the eggs probably survive. It will be interesting to see what this strange winter will do to outdoor populations.

COMMUNICATIONS

Dr. C. G. M. de Worms commented that 'spring in winter' was continuing. He had taken *Orthosia gothica* L. and a friend had taken *Panolis flammea* D. & S. (Lep., Noctuidae) at Woking, Surrey, 15.i.75. Mr. S. A. Knill-Jones said that *Selenia dentaria* F. (Lep., Geometridae) had already been taken at Freshwater, Isle of Wight, whilst Mr. R. F. Bretherton had taken specimens of *Apocheima pilosaria* D. & S. (Lep., Geometridae) in his trap at Bramley, Surrey, from the beginning of xii.74 until the beginning i.75.

The Council's Report was read and its adoption moved by Mr. G. Prior and seconded by Mr. E. S. Bradford. This was carried. The Treasurer's Report was read and the adoption of the accounts moved by Mr. R. F. Bretherton and seconded by Mr. J. Heath: The Curator's Report by Mr. A. E. Gardner and Mr. W. G. Tremewan; the Librarian's Report by Mr. G. S. E. Cross and Mr. K. G. W. Evans; the Editor's Report by Dr. P. A. Boswell and Mr. A. E. Stubbs and the Hering Memorial Trust Fund Report by the President. All were carried.

The President declared the following Officers and Ordinary Members of Council elected: President, Dr. M. G. MORRIS; Vice-Presidents, C. MACKECHNIE JARVIS and W. G. TREMEWAN; Treasurer, R. F. BRETHERTON; Secretary, G. PRIOR; Editor, Dr. P. A. BOSWELL; Curator, A. E. GARDNER; Librarian, G. S. E. CROSS; Lanternist, C. O. HAMMOND; Ordinary Members of Council, Miss V. I. DICK, L. H. EVANS, J. HEATH, D. E. WILSON, P. J. CHANDLER, D. STIMPSON, E. S. BRADFORD, J. M. CHALMERS-HUNT, C. F. RIVERS and M. G. VENTOM.

Mr. J. L. MESSENGER and Mr. A. G. STOUGHTON-HARRIS were elected Auditors for Council and Members respectively.

There were no motions or questions under Bye-Law 26(b).

Mr. C. MacKechnie Jarvis read his Presidential Address and then inducted the new President, Dr. M. G. Morris, into the chair. Dr. Morris thanked the retiring President for his past services and asked his consent to publish his Address, which was readily given.

A vote of thanks to the retiring President and Members of Council and good wishes to the new President and Council was moved by Dr. de Worms, seconded by Mr. T. G. Howarth and passed unanimously. The President moved a vote of thanks to the Auditors which was passed unanimously.

COUNCIL'S REPORT 1974

The Council is able to report that despite difficulties 1974 was a year of progress for the Society. Thirty-two new members were elected. The total membership now stands at 676. The Annual Dinner was held as on previous years at the Imperial College and 108 members and their guests attended. The Annual Exhibition was again held at Holland Park School. It was well attended, the number of those exhibiting was 74, an increase on last year. The quality of the exhibits was of the usual high standard. Twenty indoor meetings were held, the subjects being varied and covering many aspects of Natural History. These meetings were well attended. Eighteen field meetings were held, six of them over week-ends. With our country members in mind a number of meetings were held outside the Home Counties. This breaking of new ground was extremely rewarding.

The Society has been fortunate in receiving the continued help of Mrs. K. H. Smiles in the production of our Christmas Card, to the attractive design of Mr. R. Dykes. The sale and distribution of these cards has been energetically undertaken by Mr. M. C. Ventom. Mr. C. O. Hammond, who has taken over as Lanternist, has brought our collection of slides back to the Alpine Club where they will be more readily available for loan to members. It is hoped that members will make donations of slides to the Society, particularly of subjects other than the macro-lepidoptera.

The Council wishes to record its thanks to those Ordinary Members of Council who have completed their two-year term of office; to Miss V. I. Dick for her work on the refreshments at the Alpine Club; to the wives and daughters of members for their work on the excellent refreshments at the Annual Exhibition and finally to Mr. K. G. Evans and his team for organising it.

Statement of Accounts

	1973	1974	1973	1974
	£	p	£	p
To Printing Proceedings for 1974: Blocks and Colour-plates	952 04	1074 00	232 57	220 59
Postage, etc.	70 33	81 15	25 63	51 46
Centenary History (printing)	335 11	— —	335 11	— —
Sales of History (transfer)	30 72	— —	774 89	883 10
		£1155 15	£1388 20	£1155 15

CHRISTMAS CARDS ACCOUNT

53 38	To Printing and Envelopes	131 12	154 99	By Sales of Cards	197 93
5 25	Postage on Notice Sheets and Cards	18 76		Unused Provisions	18 00
10 00	Presentation to Designer	10 00			
86 36	Income and Expenditure Account—profit	56 05		(Stocks of Cards are no longer valued)	
£154 99		£215 93	£154 99		£215 93

TIES ACCOUNT

44 71	To Income and Expenditure Account—profit	33 85	By Sales of Ties	44 71	33 85
<u>£44 71</u>		<u>£33 85</u>		<u>£44 71</u>	<u>£33 85</u>

TREASURER'S REPORT 1974

The Accounts for 1974 have been approved by our Auditors, Mr. Messenger and Mr. Stoughton-Harris. I am grateful to them for doing this within a very tight time-table. As usual, there has not been time to circulate the Accounts, but copies are available here for inspection.

Inflation has gone faster, and the economic outlook is worse, than we hoped a year ago. Nevertheless, the Income and Expenditure Account shows a surplus of £410, against £157 in 1973. That is not quite as good as it sounds, because the subscription rates were increased by nearly a half for 1974, and I had hoped for a rather bigger surplus as a protection for the future. But the subscriptions received have increased by only about a third — from £1,178 in 1973 to £1,597 in 1974. We have not lost many members by resignation, but many have failed to alter their bankers' orders or otherwise to pay the higher amounts. The arrears are therefore much larger than usual, despite much hot pursuit by the Assistant Treasurer, Mr. Wakely.

Other items on the income side are satisfactory. Interest on investments and bank deposits is up. The Annual Dinner showed a profit of £25, which should help us to limit a further price increase this year. Sales of ties produced £34. Mr. Ventom managed to sell a record number of Christmas cards: the profit of £56 on them is less than last year because of a steep rise in printing costs, but is still very useful. On the expenditure side, under our new lease from the Alpine Club we pay a rent of £356 a year instead of £289, and postage and stationery costs have risen. But we did, thanks to very good help from some members and their wives, cover more of the cost of hiring the Holland School for the Exhibition from the sale of refreshments. The worst feature is the continued rise in the cost of producing and distributing the Proceedings, which is by far our largest single expense. The net cost for 1974, after allowing for good sales of past publications, is likely to be £883, £110 more than in 1973. The Council is looking for ways of producing the Proceedings more cheaply; if any member can help with suggestions, I hope he will let the Editor have them.

Turning to the Balance Sheet, on the liabilities side the Housing Fund has grown from receipt of interest and a small donation, and now stands at £1,323. Council has decided that the balance of the Centenary Fund should be used in due course for providing colour plates in the Proceedings; in the meantime it has been added to the Reserve Fund, together with some interest. I have, however, withdrawn £80, representing donations in 1973 from Dr. Peet and Mr. and Mrs. Howarth, to cover most of the cost of a new cabinet for the collections, and the Reserve Fund now stands at £858. The Hering Memorial Research Fund and the Library Fund both spent less than their income and ended at £2,177 and £317 respectively. There is a bigger figure than usual for sundry creditors because most of the bills for the 1974 Proceedings have not yet been received. Finally, the surplus of £410 in the Income and Expenditure Account has been added to the General Fund, bringing it up to £3,670.

On the assets side, sundry debtors are almost entirely the Inland Revenue. Cash at bank, on current and deposit accounts together, is £830, which is ample for our needs. The investments have been increased by £1,050 by further purchases of Greater London Council $9\frac{1}{2}\%$ stock, redeemable in 1980-2, and of Distillers Ordinary shares. There is, however, a big black spot here, because the market value of our investments was, owing to the stock market collapse, only about £5,950 at the end of the year, against

their cost of £8,272, at which they appear in the Balance Sheet. We do not need to sell any, and we must hope that their market value will recover. To some extent it has already done so.

Looking at the whole picture, we had as good a year financially as could be expected in the economic circumstances. In 1975 we shall clearly have still more trouble from cost inflation. But our cash position is strong, and the fact that most of the work of administering the Society's affairs is done without charge by members makes us much less vulnerable than many other Societies are at present.

LIBRARIAN'S REPORT

The re-arrangement of the Society's books is now more or less complete. I fear the net result will be that Members will be quite unable to find the books they require. I am hoping to get the various sections labelled in the near future.

A recent count of the books disclosed that a not inconsiderable number was missing. Some of these have since been recovered but there is still a large number unaccounted for. I think the President has already informed you that your Council consider that stricter control should be exercised over the books leaving the Society's rooms. In future, therefore, books may be borrowed only through the Librarian or his representative, who will be on duty at all meetings of the Society from 6.00 p.m. to 6.30 p.m. or by appointment. I need hardly say that no one regrets the necessity for this more than the Librarian.

Members can hardly have failed to see the new shelving in the inner basement room. Mr. Bradford is responsible for this monumental piece of work. He also provided the wood which, like everything else these days, is very expensive. I am very grateful to him for easing the storage problem — for the time being, at any rate.

The Library continues to grow, and the following books have been added during the past year, either by donation or by purchase:

- A Field Guide to the Flowers of Europe* by Oleg Polunin (purchased).
- The Genus Aloeides and Allied Genera* (Lep., Lycaenidae) by G. E. Tite and C. G. C. Dickson (presented by S. N. A. Jacobs).
- The Indo-Oriental Genus Drupadia Moore* (Lycaenidae) presented by the author, C. F. Cowan).
- Andalusian Flowers and Countryside* by Lt. Cdr. C. M. Stocken, D.S.C., R.N. presented by C. McKecknie-Jarvis).
- Provisional Atlas of Amphibians and Reptiles of the British Isles* edited by Henry R. Arnold (presented by John Heath).
- Provisional Atlas of the Insects of the British Isles* edited by John Heath and Michael J. Skelton.
- The Evolution of Melanism* by Bernard Kettlewell (presented by S. N. A. Jacobs).
- Monk's Wood — A Nature Reserve Record* by Steele and Welch (presented by Dr. Colin Welch).
- The Insects of Oxenbourne Down — A Provisional Survey* by D. M. Appleton, R. J. Dickson and G. R. Else (presented by the authors).
- Alexanor* — two parts (presented by S. N. A. Jacobs).

HONORARY EDITOR'S REPORT 1974

I regret to report that only three parts of the *Proceedings* have been published since the last Annual General Meeting: Vol. 6, pt. 4 by my predecessor and Vol. 7, pts. 1 and 2 by myself. However, pts. 3 and 4 are both with the printers and should be published very shortly. Vol. 7 will consist of 116 pages and eight black and white plates.

It would be convenient to blame delay in production this year on the three-day week, but this is not the case. The main factor has been the amount of time required of the Editor in the preparation of copy for the printers. This has been very great for two reasons. One is the amount of material which has had to be typed or re-typed by him before submission to the printers. The other is the failure of contributors to follow the style of the journal. This has resulted in many hours spent in checking or adding scientific names and authors, and references. Some years ago my predecessor published an article entitled, 'The Style of the House'; I intend to shorten and amend this for early publication as a guide for contributors, but in the meantime, would be grateful if the following could be observed: If possible, please submit double-spaced, typed material; use the names given in the most recent 'Kloet & Hincks' Check Lists' for insects (including the authors' names) and Collins' *Pocket Guide to Wild Flowers* for plants; do not underline anything except generic and specific names; at indoor meetings submit write-ups or exhibits which explain why the subject is shown and write out any lengthy or complicated communications.

For next year, finances allowing, the outlook is good. I have received several interesting long papers for publication, but still badly lack those short notes which add interest to the *Proceedings* and fill those small gaps so often present.

Finally, I should like to thank all those who have helped me during the last year, particularly Prof. T. R. E. Southwood and Messrs. R. W. J. Uffen and A. E. Gardner, and Mr. R. F. Bretherton for his patience and reassurance.

REPORT ON THE PROFESSOR HERING MEMORIAL RESEARCH FUND 1974

The Management Committee for the year consisted of the President (Mr. C. MacKechie Jarvis) and the Hon. Treasurer (Mr. R. F. Bretherton), *ex officio*, and Dr. K. A. Spencer, Prof. T. R. E. Southwood, Col. A. M. Emmet and Mr. R. Uffen, appointed by Council.

At a meeting held on 25.iv.1974 the Committee considered five applications for awards from the Fund. It approved an application from Herr H. Zoerner, who is working in East Germany on the Agromyzidae, for assistance in purchasing in West Germany a copy of Hendel's book on that family, to which he could not otherwise obtain access, at a cost including package and postage of approximately £40.

The Committee also decided that in view of the need to build up the Fund's resources, £200 from the present balances should be regarded as an addition to capital, the interest on which would be available to increase awards in future years.

CURATOR'S REPORT

Thanks to the valuable assistance given by Mr. W. Parker, work is nearly completed on incorporating the T. R. Eagles collection of Lepidoptera.

For some time it has been felt that the Society's collection of British Rhopalocera does not match the high standard set by the Heterocera. It has, therefore, been decided to rehouse the butterflies in three Hill units, to replace as many specimens as practical, and to arrange them according to the nomenclature followed by the new 'South'. Unfortunately, few of the now recognised geographical subspecies are represented. Any material, set or papered would be greatly appreciated from members visiting Scotland, Ireland, and the Scilly Isles.

Work has nearly been completed on housing the Diptera, Tipulidae in a Hill unit and on the rearrangement and expansion of the British Orthoptera. Steady progress has also been made on the Dr. A. M. Massee collection of Coleoptera.

Mr. E. S. Bradford has continued to make good progress with his work on the microlepidoptera, and Mr. P. J. Chandler on the Diptera.

Thanks to services rendered by our President, the Society received in November the collection of British Coleoptera made by the late Mr. H. W. Forster and donated by his wife. A former member, Mr. Forster collected from the late thirties to fifties mainly in the Epping Forest area where he discovered many great rarities. Unfortunately his collection has suffered badly from the depredations of *Anthrenus* and much has remained unidentified. Nevertheless many rarities have been rescued and are incorporated in the Dr. A. M. Massee collection.

The thanks of the Society are due to the following members for notable accessions: Mr. A. E. Gardner (Coleoptera and Orthoptera), Mr. B. Jackson (Hymenoptera), Mr. S. N. A. Jacobs (Diptera), Mr. C. Mackechnie Jarvis (Coleoptera, Hemiptera, Trichoptera and Neuroptera), Dr. B. J. MacNulty (Lepidoptera), Prof. J. A. Owen (Coleoptera), Mr. B. F. Skinner (Lepidoptera), Mr. A. E. Stubbs (Diptera), Mr. D. E. Wilson (Orthoptera) and Mr. S. A. Williams (Coleoptera).

Three microscopes remain on loan and a number of Coleoptera and Lepidoptera have been loaned for critical examination. Again this year further revenue has been received by the sale of duplicates at the A.E.S. Exhibition and thanks are due to the members responsible.

Finally, my thanks are due to the continued assistance given by Messrs. Bradford and Parker whose work has been rendered easier by a new work table kindly donated by our President.

13th February 1975

The President, Dr. M. G. MORRIS, in the chair.

EXHIBITS

The PRESIDENT — (1) a specimen of *Graphosoma semipunctatum* (F.) (Het., Scutellariidae) found in a house in south-east London, ?ix.74. A species of southern and eastern Europe, extending to Afghanistan. It is associated with species of Umbelliferae. This specimen was presumably accidentally introduced into Britain.

(2) An example of the closely related *G. lineatum* (L.) from the Jaca region, Spanish Pyrenees, ix.74. It has pronotal longitudinal stripes of black instead of rows of black spots. The distribution is similar — and the species is also associated with Umbelliferae.

Col. A. M. EMMET — Larval mines in *Poa annua* L. and cocoons containing pupae of *Cosmiotes freyerella* Hübner (Lep., Elachistidae). The larvae were collected, fully fed, Wicken Fen, Cambs., 8.ii.75. In 1974 larvae of this species were collected at the same locality, 30.iii., i.e. seven weeks later. The abnormally early maturing of larvae of species such as this which have their foodplant available all the year round may well cause them to have an additional generation. However, imagines are also beginning to emerge of species whose larvae mine the leaves of deciduous trees. These will be unable to find leaves on which to lay their eggs and so will die without progeny. The consequence may be that these species will become scarce.

Mr. A. E. STUBBS — (1) *Paroxyna lhommei* Hering (Dipt., Tephritidae); a species new to Britain. This female was found on chalk grassland at Folkestone, Kent, 2.viii.1974.

(2) A male of *Xylota florum* F. (Dipt., Syrphidae) from Ambersham, W. Sussex, 28.vii.74, taken on dead beech. Re-examination of the material in the British Museum (Nat. Hist.) has revealed that *X. florum* of the British list includes two species. Four from the New Forest (1894 and 1907) are true *X. florum*, the remaining 30 specimens, all from the Scottish Highlands (1898-1945), are *X. coeruliventris* Zett., which name must now be added to the British list.

Mr. C. O. HAMMOND — A female of *X. coeruliventris* from Rothiemurcus Forest, Inverness-shire, 20.vii.1974. The female of *coeruliventris* has bluish spots on the abdomen, whilst the female of *florum* has yellow spots. In both species the male has yellow spots.

Mr. M. G. VENTOM — Spider beetles (*Niptus hololeucus* (Fald.)) (Col., Ptinidae) found in old furniture, 9.ii.75.

COMMUNICATIONS

Mr. Ventom remarked on a sawfly that he had recently seen nearly in leaf and which would by now be fully out.

Mr. E. S. Bradford stated that his own observations concurred with Col. Emmet's. He referred to the oak-feeding *Stigmella suberivora* Stainton (Lep., Nepticulidae). He added that he had recently encountered the cellar beetle (*Blaps mucronata* Lat.) (Col. Tenebrionidae) in a butcher's shop, where he believed the larvae were feeding behind the old cork lining of a refrigerator, although none were found.

Mr. R. Tubbs said that some of his ova of *Lysandra coridon* Poda (Lep., Lycaenidae) had hatched and that Mr. L. D. Young had had the same happen.

Mr. S. N. A. Jacobs, commenting on frost-free winters, said that in 1972 he had observed nepticulid larvae having to lower themselves to the ground on silk. In the winter of 1973 he saw only two mines of *Ectoedemia subbimaculella* Haw. (Lep., Nepticulidae) on oak and in 1974, none. Mr. Bradford suggested that some species might carry over two years.

Slides were shown by Messrs. Bradford, Hammond and R. Bateman. Col. Emmet projected some leaf mines containing live larvae (the leaves were placed in a transparent envelope which was placed directly into the projector). The results were very successful.

27th February 1975

The President, Dr. M. G. MORRIS, in the chair.

The Manchester Entomological Society was elected a corporate member.

EXHIBITS

Col. A. M. EMMET — An off-print from *Notulae Entomologicae* (1974, 54: 91-96) shown at the request of Dr. K. Sattler of the British Museum (Nat. Hist.). The paper describes *Gnorimoschema bodillum* Karsholt and Nielsen (Lep., Gelechiidae), a new species discovered on sandhills in Denmark which may also occur in Britain.

The adult (wingspan 8-13 mm) has dark greyish brown forewings overlaid with whitish and ochreous scales and with several diffuse dark spots. The larva feeds on *Salix repens* L. and *Myrica gale* L. growing on migrating sand-dunes. It makes tubes in the sand extending up to the lower leaves of the foodplant where it feeds on their under-surface. Pupation takes place in a tube in the sand and when the sand shifts in windy weather these are often left exposed and conspicuous.

The moth appears to be bivoltine, though larvae, pupae and imagines are to be found together during most of the summer. An unusual characteristic is that the moths have never been observed to fly, though they run rapidly over the sand and take short leaps up to ten inches in distance.

The species should be looked for in similar habitats on the coasts of Britain.

Rev. D. J. L. AGASSIZ — A specimen of the moth ? *Cydia saltitans* bred from the Mexican jumping bean, commercially imported and given to a colleague for Christmas. Also the beans with pupa case and live pupa inside; and the accompanying literature.

Mr. C. O. HAMMOND — (1) a sprig of hawthorn in blossom from Scout Park, New Southgate, London, N.11, 23.ii.75. (2) A queen of *Vespa rufa* (L.) (Hym., Vespidae) taken at Golders Green, London, 24.ii.75. The previous earliest record of the exhibitor's was 9.iv.

COMMUNICATIONS

Col. Emmet commented that, although the leaf-mines had projected well at the previous meeting, the heat had killed the larvae.

Col. Emmet said that Mr. E. C. Pelham-Clinton, commenting on Col. Emmet's exhibit at the previous meeting of *Cosmiotes feyerella*, thought that the foodplant could not have been *Poa annua* L., but another *Poa* sp.

It was added that three of five pupae had already hatched, something quite unprecedented for a May species.

Rev. Agassiz remarked that Mr. B. Goater had two females of *Endromis versicolora* L. already and was appealing for males.

The President wondered if the flight muscles of *G. bodillum* had been dissected, but this was not known. Mr. R. F. Bretherton suggested that migratory dunes, where *S. repens* occurred, in Fifeshire, might support this moth.

Professor J. A. Owen remembered that, when in Rotterdam, a small seed-like object about 1mm. in size had fallen from a bowl of flowers and then 'hopped', later an *Apion* sp. had emerged (Col., Apionidae). The President said that this was known with *Anthonomus* spp. and that the leaf-discs of some saw-fly larvae also jumped.

Mr. B. Hargreaves gave a talk entitled, 'The Illustration of Insects' which he accompanied with slides and exhibits.

13th March 1975

The President, Dr. M. G. MORRIS, in the chair.

EXHIBIT

Mr. T. G. HOWARTH — A copy of the Japanese journal, *Yadoriga*, which included photographs taken at the British Museum (Nat. Hist.) and of Society members.

COMMUNICATIONS

Col. A. M. Emmet announced that he had bred a specimen of *Phyllo-norycter roboris* L. (Lep., Gracillariidae) from mines in oak leaves collected at Hough Wood, Heref., 16.xi.74. He drew attention to the field meeting to be held at that locality on 31.v - 1.vi which would give an excellent opportunity to obtain this very local and beautiful species.

He added that the exceptionally mild winter had affected the time of larval feeding and imaginal emergence of *Stigmella suberivora* Staint. (Lep., Nepticulidae). According to the textbooks (Meyrick and Ford), the larvae are to be found in April and the adults in May, though in many years both are somewhat earlier. This year, the speaker visited Brockwell Park in south London on 13.ii to collect the mines in leaves of holm oak (*Quercus ilex* L.). The mines were abundant, but even at this early date almost all were vacated. From the few larvae still to be found, eleven adults emerged, ten of them being females. In Britain the species is bivoltine, with summer larvae feeding in July and early August, producing adults in August and September. However, in the Mediterranean region, where the species is native, it is triple-brooded and having got off to such an early start in Britain this year it might follow a similar regime.

He also said that from about 160 ova laid by a female Kentish Glory (*Endromis versicolora* L.) (Lep., Endromidae) taken at Aviemore in early May 1972, he had retained ten for breeding purposes. From these, three imagines had emerged in 1973, five in 1974 and one in 1975; one was still unaccounted for. About 150 larvae had been distributed to members of the Society in May 1972; he wondered whether others still had adults emerging from the original brood.

Mr. R. F. Bretherton said that larvae of *E. versicolora* that he had bred a couple of years ago all produced imagines the following year but that this contrasted with previous experience. Dr. B. J. MacNulty said that all of the larvae which he had received from Col. Emmet had produced imagines the following year and that, as he had commented at a previous meeting, this happened when the ambient temperature was held above 54°F.

Mr. T. G. Howarth gave a talk entitled, 'South-East Asia and the Pacific Revisited', which he illustrated with colour slides.

10th April 1975

A Vice-President, Mr. W. G. TREMEWAN, in the Chair.

The death was announced of Mr. F. D. Buck, past President, Editor, Lanternist and Honorary Life Member of the Society.

The following new members were declared elected: Messrs. D. H. Squires and R. A. Adams.

EXHIBITS

Col. A. M. EMMET — Two specimens of *Phyllonorycter roboris* Zell. (Lep., Gracillariidae) bred on 11 and 14.iii.75 from mines collected at Hough Wood, Heref. on 16.xi.74 together with mines of that species and *P. quercifoliella* Zell. for comparison. The mine of *roboris* is distinguishable because the larva makes no use of its frass in constructing its cocoon, instead spinning a stout cocoon against the green blob on the upper surface of the mine. Consequently, when the mine is held up to the light, it is opaque and nothing within can be observed, whereas with the other species the frass-flanked cocoons are clearly visible. Moreover, the pupal skin of *roboris* is blackish while those of the other oak-feeding species are olive-brown or pale reddish.

Mr. A. E. STUBBS — A map of the known distribution of *Xylota coeruleiventris* Zett. and *X. florum* F. (Dipt., Syrphidae) species which he had exhibited at a recent meeting.

Dr. P. A. BOSWELL — A male and female of the large nematode worm *Ascaris lumbricoides*, a parasite in the human intestine.

COMMUNICATIONS

Commenting on Mr. C. O. Hammond's exhibit at the 27th February meeting, Dr. C. G. M. de Worms remembered that in mid-March he had been woken at night by a queen wasp walking on his pillow.

Mr. Tremewan had seen *Aglais urticae* L. (Lep., Nymphalidae) at Woodham, Surrey, 6.iv.75 and Mr. E. S. Bradford reported that his niece had seen it in Kent on the same day.

Mr. R. F. Bretherton had watched the same species walking down the aisle, following a patch of sunlight, during a service at his local church at Bramley, Surrey, about three weeks ago.

Mr. M. G. Venton commented that his light trap at Ringstead, Dorset, had produced, last week-end, only six specimens of *Orthosia gothica* L. (Lep., Noctuidae). Mr. Bradford had found a dead specimen of *Anticlea badiata* D. & S. (Lep., Geometridae) on a pond at East Blean, Kent, 6.iv.75.

Dr. D. V. Alford gave an illustrated talk entitled, 'British Bumblebees', which was followed by an interesting discussion.

24th April 1975

The President, Dr. M. G. MORRIS, in the chair.

The following new members were declared elected: Miss Christine G. Darby, Messrs. D. Baker, S. Conway, C. Hart, D. K. Laffling and D. J. E. Ward.

EXHIBIT

Col. A. M. EMMET — A plant, purporting to be *Hypericum hirsutum* L., collected by Mr. R. S. George at Lancut, Glos., 8.vii.63. It has been mined by a lepidopteron, determined by Dr. K. A. Spencer as *Leucoptera lushatella* H.-S. (Lep., Lyonetiidae), a species not at present on the British list. However, the plant appears to be misidentified and may in fact be (*Lithospermum officinale* L.). If so, the identity of the mine is uncertain. Only two species of Lepidoptera are known to mine this plant, *Cnephasia incertana* Treits. (Tortricidae), which mines only in the first instar, making a much smaller mine; and *Acrocercops imperialella* Zell. (Gracillariidae), which does not start mining till late August and makes a very different mine in its usual foodplant, comfrey (*Symphytum officinale* L.).

COMMUNICATIONS

The President, and many other members, agreed that the plant shown by Col. Emmet was gromwell. The President hoped for further news at a later date.

Dr. C. G. M. de Worms said that while in the Scottish Highlands the previous week he had seen *Trichopteryx carpinata* Borkh. and *Archiearis parthenias* L. (Lep., Geometridae), both species of *Xylena* (Lep., Noctuidae) and *Endromis versicolora* L. (Lep., Endromidae). Whilst two days ago in Woking, Surrey, he had seen *Anthocharis cardamines* L., *Pieris napi* L. and *P. rapae* L. (Lep., Pieridae), *Drymonia ruficornis* Hufn. and *Odontotia carmelita* Esp. (Lep., Notodontidae) and *Polyplocia ridens* F. (Lep., Thyatiridae).

Mr. J. M. Chalmers-Hunt had heard that Mr. L. W. Siggs had taken *Pheosia gnoma* F. (Lep., Notodontidae) in Hants. today. Also he reported an early natural emergence of *Laothoe populi* L. (Lep., Sphingidae) on 7.iv.75 in Kent, in Major F. Abraham's garden at Adlington. He, himself, had taken *Adela cuprella* D. & S. (Lep., Incurvariidae) on sallow at Chobham Common, Surrey, the previous weekend and at Effingham, Surrey, two-thirds grown larvae of *Chloroclystis chloerata* Mab. (Lep., Geometridae).

Mr. G. R. Else had heard from Mr. E. C. M. Haes that a colony of the Field Cricket (*Gryllus campestris* L.) (Salt., Gryllidae) had been trampled out of existence by cattle at Arundel Park, Sussex.

Mr. J. Muggleton had been looking at data concerning *Lysandra coridon* Poda (Lep., Lycaenidae). He wondered if the females aestivated between mating and egg laying as there appeared to be a peak of males in early July, whilst females were much commoner three to four weeks later. Dr. de Worms remembered seeing thousands of females of this species, but very

few males, at Royston Heath in 1927 before the population fell. Mr. S. R. Bowden thought that Dr. Cockayne had suggested that the normal sex ratio of this species was less females to males.

Dr. J. Thomas and Miss L. Farrel gave a talk, illustrated with slides, entitled 'The Ecology and Conservation of the Black Hairstreak and Chequered Skipper'. This was followed by a discussion which only ended due to lack of time.

8th May 1975

The President, Dr. M. G. MORRIS, in the chair.

EXHIBITS

Mr. A. E. WILLIAMS — (1) An obituary notice of Mr. F. D. Buck from the *New Scientist* of 10.v.75.

(2) A specimen of *Trigonogenius globulum* Sol. (Col., Ptinidae), a 'spider beetle' usually associated with stored food. This example was taken out of doors near the River Test in tussock sedge (*Carex paniculata* L.).

Col. A. M. EMMET — Vacated galls in birch twigs, collected 4-5.v.75, Barton Mills, Suff. The galls resemble those made by *Lampronia fuscatella* Tengström (Lep., Incurvariidae), but are smaller. Whereas the galls of *fuscatella* should be tenanted until June, those exhibited seem to have been vacated for a long period, possibly since the previous summer.

Prof. J. A. OWEN — Examples of two dytiscid beetles which were added to the British list in 1974: *Hydroporus glabriusculus* Aubé, near Selkirk, iv.75 and *H. elongatulus* Strm., near Peebles, iv.75.

Mr. G. PRIOR (for Prof. OWEN) — An ash stick containing a larva of *Zeuzera pyrina* L. (Lep., Cossidae).

Dr. P. A. BOSWELL — Examples of beetles taken with ants on the Society's two previous field meetings.

(1) With *Formica sanguinea* Latr.: the myrmecoid carabid *Dyschirius globosus* (Herbst) and the staphylinid *Drusilla canaliculata* (F.), a possibly myrmecophilous beetle, Chobham Common, Surrey, 13.iv.75; a true guest, the staphylinid *Lomechusoides strumosa* (F.), one of two specimens found by the exhibitor and Prof. Owen during the excavation of five host nests at Pyrford Common, 3.v.75.

(2) With *Lasius fuliginosus* (Latr.): the silphid *Leptinus testaceus* Mull., relation to the ant uncertain, and the predatory staphylinid *Zyras funesta* (Grav.) from Old Woking, Surrey, 3.v.75; the nitulid *Amphotis marginata* (F.), a species which obtains regurgitated food from the ant workers, Pyrford Common, Surrey, 3.v.75.

COMMUNICATIONS

Mr. M. Tweedie gave a talk entitled 'Penang and Sumatra, 1974', which he illustrated with colour slides of the excellence which is expected from him.

22nd May 1975

The President, Dr. M. G. MORRIS, in the chair.

The following new members were declared elected: Messrs. P. Glanville and M. F. Trimble.

EXHIBITS

THE PRESIDENT — (1) Galls of *Xestophanes potentillae* (Retz.) (Hym., Cynipidae) on the stems of *Potentilla reptans* L. (creeping cinquefoil), Porton Range, Wilts., 13.v.75. A fairly common gall, the adult wasps appearing in June, according to Eady & Quinlan (1963, *Handbk. Ident. Br. Insects* 8 (1a)). One plant has last year's galls, from which the wasps have emerged, as well as some of this year's. Darlington (1968, *Pocket Encyclopedia of Plant Galls in Colour*) states that the larvae pupate in the galls in October and overwinter but one which I opened contained a living larva.

(2) A living specimen of the weevil *Ceutorhynchus unguicularis* Thomson (Col., Curculionidae). Near High Wycombe, Bucks., 21.v.75. Since being added to the British list in 1966 on specimens from West Suffolk and the Burren of County Clare this species has been recorded only from Silbury Hill, N. Wilts., so that the Bucks.' record is only the fourth vice-county in which the species is known to occur. The weevil is associated with *Arabis hirsuta* L. (hairy rockcress), although the early stages are unknown. It should be looked for now, and may be found sitting on the flower heads and stems of the foodplant.

Col. A. M. EMMET — Twelve specimens of *Bucculatrix thoracella* Thunb. (Lep., Lyonetiidae) reared from larvae taken at Hough Wood, Heref., 17.vii.74. The larvae were taken in their first instar, when they mine the leaves of the small-leaved lime (*Tilia cordata* Miller); later they feed on the underside of the leaves. They were fully fed in early August. No moths emerged in 1974 and the pupae were overwintered in a potting shed. They were brought indoors to a heated room on 15.iii.75 and 17 imagines emerged, 16-29.iv.75.

The text-books state that the species is bivoltine, the larvae feeding in June and August and the imagines flying in May and July. There was no sign of earlier feeding on the lime leaves in Hough Wood and, as no imago emerged in 1974, this batch was clearly univoltine. Observation of the feeding of this species in Leigh Woods, Som., also suggests that there is only a single generation. However, the behaviour of *Stigmella tiliae* Frey (Lep., Nepticulidae), whose mines were collected on the same foodplant on the same day, shows that there is inconsistency of behaviour amongst the leaf-miners; five adult *tiliae* emerged 2-6.viii.74 and four, after overwintering in the same container as the *thoracella*, 15.iv.-3.v.75.

Rev. D. J. L. AGASSIZ — Some examples of microlepidoptera which mine the leaves of pine.

(1) *Ocnerostoma friesei* Sven. and *O. piniariella* Zell. (Lep., Yponomeutidae). Both species have brown larvae which mine from the tip, where the egg is laid, and spin up between needles for pupation. *O. friesei* is usually on the wing in April and early May, but this year they have flown from late February until now. The females are paler than the males. *O. piniariella* flies in June and July.

(2) *Cedestis subfasciella* Steph. (Lep., Yponomeutidae) mines in the same manner. The larva is green and it spins a tough white cocoon on the ground.

(3) *Cedestis gysselinella* Zell., which seems usually to mine from the base towards the tip, if necessary leaving the mine and feeding externally in a very loose web. The larva is greenish, with a brown head and small black dots.

COMMUNICATIONS

Members agreed that butterflies generally were scarce. Mr. G. Prior had seen *Anthorcharis cardamines* L. and *Gonepteryx rhamni* L. (Lep., Pieridae) at Gusset Wood, 17.v.75 and the President reported *Hamearis lucina* L. (Lep., Nemeobiidae) from the Chilterns on 21.v.

Prof. P. A. Jewell gave a talk entitled 'Survival in Isolation; the Ecology and Behaviour of the Feral Sheep of St. Kilda'.

IRISH BUTTERFLIES

Nash (1975) has drawn attention to the problem of the Irish race of the mountain ringlet (*Erebia epiphron* Knoch). Kane's original specimens came from a 'little grassy hollow halfway up' Croagh Patrick, and Nephin is also quoted as a locality. The butterfly seems undoubtedly to have gone from these two sites, but some 20 years ago the late Lord Talbot de Malahide told me of a straggler taken at low level on the East side of Lough Conn. Is there not also an Irish specimen in the Rothschild-Cockayne-Kettlewell collection?

It is hard to conceive why a high-level subspecies occurring only about 7,000 ft. in Italy should also be found at low level in Ireland, but I suspect that the clue lies in a careful look at the Kane collection, now in the Dublin Museum. Some years ago, the late E. S. A. Baynes told me that this contained seven specimens, three labelled as from Croagh Patrick, but the other four simply 'E. Kane Collection'. These latter ones were set in the continental manner, on continental pins. It would be of major interest to check the data labels of the insects whose photographs were used by Warren.

J. F. D. Frazer

REFERENCE

Nash, R., 1975. The butterflies of Ireland. *Proc. Brit. ent. nat. hist. Soc.*, 7: 69-72.

BOOK REVIEW

Discovering Garden Insects and other Invertebrates by Anthony Wootton. 80 pp. + 16 black and white plates. Shire Publications Ltd., 45p.

This small book would serve as a very useful introduction to invertebrates for the younger reader. It covers many of the habitats to be found in the garden with chapters such as 'The flower border', 'Life in the soil', 'Rubbish and compost heaps'. Both classification and ecological aspects appear to be covered well and accurately. At the end there is a guide to societies, journals and further reading which should be of use to anyone requiring further information.

P.A.B.

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MEETINGS OF THE SOCIETY

are held regularly at the Society's Rooms, but the well-known ANNUAL EXHIBITION takes place in the autumn in external accommodation.

Frequent Field Meetings are held at weekends in the Summer. Visitors are welcome at all meetings.

The current Programme Card can be had on application to the Secretary.

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PROCEEDINGS

THE 1975 PRESIDENTIAL ADDRESS

by C. MACKECHNIE JARVIS

(given at the A.G.M., 23rd January 1975)

The Report of your Council which has just been read discloses that our hundred and second year has passed uneventfully, that our standards have been maintained and a steady progress achieved. Attendances at our regular evening meetings have been good and members have introduced a number of visitors from home and overseas.

No one could describe 1974 as a year to be remembered, unless for its spells of indifferent weather. In spite of this, however, members and their friends contrived as usual to make the Society's Annual Exhibition the outstanding event in our year. For many years now all formal business has been eliminated from this function, including the duty laid on the President in former years to appeal to those present to support the collection bowl — a duty which caused one well known President to become convulsed with suppressed mirth, in which we all joined most heartily.

My predecessors in office have in their Annual Addresses consistently stressed the indebtedness of the membership to the band of enthusiasts who in their allotted spheres run the Society. The names of the principal officers and members of Council are printed on the Programme Card, but many other members (and their wives and friends) help to keep the organisation running efficiently.

I am aware that formal votes of thanks will be passed but I cannot allow this opportunity to slip by without expressing my personal appreciation of the loyalty and forbearance shown to me by the Council members during my year of office.

Every President leans heavily on the Secretary and takes his lawful instructions from one upon whom, in this, as in other Learned Societies, we rely for continuity. Our Secretary has helped me in every possible way and I would like to thank him for his unfailing support and efficiency. On the left of the President sits the Editor of the Proceedings, whose hard word in print remains immutable for all time. The Editor's lot is not a particularly easy one, since to the normal hazards of his Office is now added the bogey of rising costs of both paper and printing. This last affects the Society as a whole, and it falls to the Treasurer to exercise that strict financial control of our expenditure in which he has excelled during his long period in Office. The work of the Curator has ever been demanding in both knowledge and time and we all appreciate the courtesy and ready assistance of Mr. Gardner as well as the seemingly unending work on the Collections which have always been a feature of this Society. Our Librarian Mr. Cross has reported on his sphere of activity and I think the Society should know how much time he has spent in reorganisation — aided by the generous provision and erection of shelving by Mr. Bradford. I must resist the temptation to continue through the list, but again express to all those active in the Society my personal thanks for their service during the past year.

Your Council is well aware that the personal interests and family activities of its members, difficulties of travel and so forth combine to prevent office holders from continuing indefinitely. There is therefore a steady demand for volunteers to undertake a share in running the Society. Council hopes

that anyone who can spare a little time, preferably for a continuous spell of 12 months (or short term for the duration of the Annual Exhibition), will speak to the Secretary. The duties are wide-ranging and suit all tastes.

Our membership now stands at around 670, or approaching three times the number on the list in 1925 when I joined the Society. Unhappily we have lost several members by death during the year and it is my sad duty to say a few words about those no longer with us.

Mr. Cyril W. Mackworth-Praed, O.B.E., F.R.E.S., of Burley, Hants., died on 30th June at the age of 83. He was eminent in the fields of Lepidoptera and Ornithology and was widely known as the author of the Handbook of African Birds, published in 6 volumes between 1952-72. Mr. Mackworth-Praed joined the Society in 1952. Mr. C. A. W. Duffield, M.C., J.P., of Brook, near Ashford, Kent, died at the age of 87 in December last. He joined the Society in 1949 and was a good general naturalist with special interests in the Coleoptera and Homoptera. For a number of years he had been on the staff of Wye Agricultural College, Kent, at East Malling. Mr. Duffield had been a genial host to the Society upon occasions of our field meetings at Brook. Mr. W. H. Storey, O.B.E., who died at his home at Bealings, Suffolk, earlier in the present month at the age of 74, and had been a member since 1924. He was well known as a keen lepidopterist and was formerly resident at Cambridge. Mr. Harold W. Forster died in July 1974 at the age of 65, shortly after his retirement. He joined the Society in 1939, at which time he lived at Chingford, but resigned soon after moving to Harlow. Mr. Forster, a native of Beccles in Suffolk, was a keen and successful collector of coleoptera, working Epping Forest and the Beccles districts almost exclusively. His widow has given his collection to the Society, and material from it will be incorporated into our main collection.

Before passing to the second part of my address, may I say how very much I appreciate the honour accorded me by the Society in electing me to the highest Office. My year in the Chair I have enjoyed immensely, although at times I have been conscious of my inability to bring into the discussions the expertise of many of my illustrious predecessors and present colleagues in the Society.

My interests lie with the Coleoptera and you will not be surprised if I now declare my intention to speak on this subject under the title of 'A History of the British Coleoptera'.

12th June 1975

The President, Dr. M. G. MORRIS, in the Chair.

The death was announced of Mr. W. Wildridge.

The President announced that Dr. C. G. M. DE WORMS and Mr. T. G. HOWARTH had been elected to Honorary Membership of the Society.

EXHIBITS

THE PRESIDENT — (1) Offprint of a paper by P. A. Opler (*American Scientist*, 62: 67-73 (1974)) showing a photograph of a fossil leaf mine of a *Nepticula* sp. in a leaf of *Quercus wislizenoides* Axelrod from the Miocene of Nevada, U.S.A. The configuration of the mine is indistinguishable from that made by the living *N. variella* Braun on *Quercus agrifolia* Nee and *Q. wislizenii*, living descendants of the fossil species.

(2) A specimen of the weevil *Larinus planus* (F.) (Col., Curculionidae) from Thorny Down, Porton Range, Wilts., 28.v.1975. This is an uncommon species, usually taken as ones or twos and is the subject of a recent note by Mr. A. A. Allen (*Entomologist's mon. Mag.* (1974), 110, (1975), 66)). The larva feeds in the seed heads of various thistles, probably *Carlina vulgaris* L. in the case of this specimen, which was actually collected while searching for larvae of *Lysandra coridon* Poda (Lep., Lycaenidae). There are scattered records from southern England, with one as far north as Barmough, N. Wales.

(3) Adults and a (larval) leaf-roll of the weevil *Byctiscus betulae* (L.) (Col., Attelabidae). One female, Whiteparish Common, Wilts., 30.v.1975. One male and one female, Botley Wood, Hants., 30.v.1975; all beaten from *Corylus avellana* L. Leaf-roll (also on *C. avellana*) from Whiteparish Common, 5.vi.1975. *B. betulae* is markedly sexually dimorphic, the male being blue, with a spine on each side of the thorax, whereas the female is golden green with no thoracic spines. Like several attelabids *B. betulae* feeds as a larva in leaf-rolls constructed by the ovipositing female. In the case of this species, a fairly large one, several leaves may be incorporated in the roll. *B. betulae* is local with scattered records throughout England. Probably some of these are inaccurate because of confusion of names with the common *Deporaus betulae* (L.).

Mr. R. W. J. UFFEN — (1) Live male and female *Xylomya maculata* (Meig.) (Dipt., Xylomyiidae), reared from wood mould in beech tree, High Beach, Epping Forest, that day.

(2) Male and female *X. marginata* (Meig.), Chiswick, Middlesex, 25.vi.1956, basking and whining on leaves of apple, for comparison.

(3) *Nemapogan picarella*, Clerck, Aviemore, Inverness, mid vii.1974. Six were on the lee of a rotten birch in a gale on a sunny afternoon.

Dr. B. J. MACNULTY — Specimens of *Grypidius equiseti* (F.) from the Gower Peninsula, Glam. I have known that this beetle occurred in Gower for some years on the strength of a single specimen found on Wild Thyme (*Thymus drulei* Ron.). Dr. Massee always used to suggest I looked for it on *Equisetum* sp. which was growing in 6-8 ft. of water in various places we visited together. However, at Whitsun this year (or should I say Spring Bank Holiday) I found a nice area of *E. palustre* L. and by sweeping on a calm day for two and a half hours managed to collect a short series. The beetle obviously rests at the tip of the plant which is black and would be almost invisible. On a second day when there was a stiff breeze, no specimens could be found. A few days later I found another specimen at Waltham Abbey crawling along a concrete bridge approach a long way from any *Equisetum*. Fowler says it is not common but widespread. He does not mention its occurrence anywhere in Wales, so it may be a new record for the area.

Col. A. M. EMMET — Two species of Nepticulidae, one new to Britain and the other confirming an earlier record made on inconclusive evidence. (1) Four specimens of *Stigmella auritella* Skala. Suspected examples of this species occur in the Fletcher Collection in the Department of Zoology at Cambridge University. They were bred from mines taken at Woodthorpe, Lincs. on an unspecified variety of willow, probably about 1890. Some specimens from this series were sent to Dr. J. Klimesch in Austria but arrived in poor condition and his examination of them proved inconclusive. In order to provide fresh material for study, the exhibition bred a series, of which the moths exhibited form part, from mines collected on *Salix*

aurita L. in West Galway during July 1974; the moths emerged in August. Mr. E. S. Bradford dissected several male specimens from this series and after comparing their genitalia with those of *Stigmella salicis* Staint., concluded that the Irish specimens belonged to a distinct species. This has since been confirmed by Dr. Klimesch, who states that the genitalia of the Irish specimens correspond exactly with those of *S. auritella* occurring in Austria. In addition to the Irish specimens, two specimens bred from Beneden, Kent in March 1975, together with examples of *S. salicis* for comparison, were shown.

(2) A specimen of *Stigmella samiatella* Zell. bred from a mined oak-leaf collected near Knighton, Rad., 19.xi.74; the imago emerged on 27.iv.75. This species was placed on the British list by Professor Hering in 1952 solely on the evidence of a vacated mine. Since that date another species, *S. svenssoni* Johansson, has been recognised; its larva also feeds on oak making a mine often indistinguishable from that of *S. samiatella*. It occurs in Britain. The mine seen by Professor Hering could, therefore, have been that of *svenssoni* and the grounds for retaining *samiatella* on the British list were inadequate. However, since *samiatella* is a common species on the Continent, its occurrence in Britain is not unexpected. The specimen exhibited is the first British specimen to be recognised, but a second has since been found in the Bankes collection at the British Museum (Nat. Hist.) which bears the date, 'Bred Danbury, Essex, 1.vi.1900'.

The species has a black head and may be distinguished from *S. atricapitella* Haw. and *S. ruficapitella* How. by the absence of androconical scales on the hindwing of the male. Females are hard to separate from those of *S. atricapitella* on superficial characters, but the genitalia of *samiatella* in both sexes are very distinct from those of related species.

Male species of *atricapitella* and *ruficapitella* are shown for comparison.

Mr. G. PRIOR—Three imagines of *Chloroclystis debiliata* Hübner (Lep., Geometridae) (The Bilberry Pug). Larvae taken on bilberry, 12.v.1975 in woods near Godalming, Surrey. The moths emerged on 11.vi.75. The larva feeds on the bilberry and mostly on the flower, in its first instar it probably feeds inside the flower; later when too large for this it forms a shelter by spinning together two leaves of bilberry. It seems to use this only to hide in when not feeding and goes out to feed on the flowers. Its spinning differs from that of other insects feeding on bilberry at this time, notably larvae of *Hydriomena furcata* Thunb. taking two leaves laying side by side and just pinning the edges together with a few threads of silk. The spinnings made by *furcata* and other larvae are much more complicated and involve leaf-rolling. It is probable that the larva does not always return to its shelter, either because it cannot find it or does not wish to, but instead, spins another one. This may account for the great number of empty spinnings found.

COMMUNICATIONS

The President reported that *Carterocephalus palaemon* Pallas (Lep., HesperIIDae) had been confirmed in small numbers in the midlands and that a new locality had been found in Scotland, west of known localities.

Mr. R. F. Bretherton had taken a fresh male specimen of *Euphyia biangulata* Haw. (Lep., Geometridae) in his trap at Bramley, Surrey, 6.vi.75. He added that there were only about ten Surrey records in the last 25 years. He thought that it was not an immigrant but, rather, was present at a very low density except in Devon and Cornwall.

Dr. C. G. M. de Worms reported that when he had visited the New Forest two weeks previously during good weather, the only butterfly he had seen had been *Gonepteryx rhamni* L. (Lep., Pieridae). On the Surrey-Sussex border last week-end he had seen *Leptidea sinapis* L. (Lep., Pieridae) and two species of fritillaries, but numbers were down. At Sheepleigh, Surrey he had seen two *Lasiommata megera* L. and three *Pararge aegeria* L. (Lep., Satyridae) but no *Hamearis lucina* L. (Lep., Nemeobiidae). He had found about 100 moths in his light trap this morning, including an early Marbled Beauty. Geometers had predominated in the last week, including more pugs than usual.

Mr. K. G. Evans had spent a disastrous last week in May at Aviemore, Inverness-shire, when only two butterflies and four moths had been taken, all of which could be found at home in Croydon.

Mr. Uffen had been at a chalkdown in Herts. on the previous day and had seen just two *Pieris brassicae* L. (Lep., Pieridae) and one *Coenonympha pamphilus* L. (Lep., Satyridae). Sweeping had produced only four or five insects per sweep and very few heteropterons were present. In contrast, the President had recently visited Porton Down where, although he thought numbers were down, he had seen *H. lucina*, *Callophrys rubi* L. (Lep., Lycaenidae), *Pyrgus malvae* L. and *Erynnis tages* L. (Lep., Hesperidae). Mr. E. H. Wild had taken his first *Autographa gamma* L. (Lep., Noctuidae) for the year last night. Mr. M. G. Ventom had seen *P. aegeria* two weeks ago and *L. sinapis* this week, both in Surrey.

Mr. Uffen thought that these discrepancies might be due to late frosts causing damage to exposed areas. Recently, in N. Wales with Mr. P. N. Crow, he had seen no butterflies at Harlech, Merion., but in inland valleys they were more in evidence.

The President reported that Mr. J. Heath and a colleague had already seen adult grasshoppers at Aviemore, whilst Mr. Uffen said that, at the Herts. site he had already mentioned, all the grasshoppers were only first or second instar.

Col. A. M. Emmet gave a talk entitled, 'The British Nepticulidae', which he illustrated with colour slides taken by Messrs. E. S. Bradford and R. W. J. Uffen.

26th June 1975

A former President, Col. A. M. EMMET, in the chair.

The following new members were declared elected: Messrs. B. Harley, T. B. Larsen, D. C. Lees, R. J. Webb and P. H. Williams. Leeson House was elected to corporate membership.

COMMUNICATIONS

Dr. C. G. M. de Worms said that butterflies still seemed few in number. Ten days previously he had seen *Polyommatus icarus* Rott. (Lep., Lycaenidae) and *Coenonympha pamphilus* L. (Lep., Satyridae) at Selbourne. The warm weather had produced better nights and he had taken *Hyloicus pinastri* L. and *Smerinthus ocellata* L. (Lep., Sphingidae) as well as an early *Apeira syringaria* L. (Lep., Geometridae).

Col. Emmet had seen no leaf-miners and wondered if the abnormal weather had upset their 'internal clocks' causing them to overwinter a second time or had killed them.

Dr. D. J. Lewis gave a talk entitled 'Phlebotomine Sandflies: biology and relation to disease' which he illustrated with slides. This was followed by a discussion.

10th July 1975

The President, Dr. M. G. MORRIS, in the chair.

EXHIBITS

The Hon. MIRIAM ROTHSCILD, GUY VALADON and ROSEMARY MUMMERY — An exhibit of larvae of *Samia cecropia* L. (Lep., Saturniidae). These were part of a brood (from ova supplied by Prof. Waldbauer) from a crossing of heterozygous females and homozygous males for the blue mutant (autosomal recessive). The larval tubercle which are bright orange-red in normal larvae are colourless in the blue mutant. The pupa of the blue mutant contains only 3.78 μ g of carotenoids per individual, whereas the normal pupa, reared on the same plant (apple), contains 266 μ g per individual.

Mr. E. S. BRADFORD — A specimen of *Aeshna grandis* (L.) (Odon., Aeshnidae), found dying on the ground of studios at Boreham Wood, Herts., 10.vii.75.

Mr. R. K. MERRIFIELD — A shield bug found on buddleia at Mylor, Cornwall, 23.v.75. The leaves were covered with a black, tar-like substance.

Mr. A. S. STUBBS — (1) Some local craneflies (Dipt., Tipulidae) from Walberswick, Suffolk, 14.vi.75: *Tipula marginata* Meig., *Limonia danica* (Kunze), *L. complicata* (de Meijere) and *Erioptera bivittata* (Loew).

(2) An advertisement by a factory in Herefordshire offering a reward of 50p for information leading to the destruction of wasps' nests within a three mile radius. 670 nests were destroyed last year.

COMMUNICATIONS

The President thought that Mr. Merrifield's exhibit was *Dolycoris baccarum* (L.) (Hem., Pentatomidae).

The Hon. Miriam Rothschild gave a talk entitled 'Egg-laying Behaviour of the Large White Butterfly'.

24th July 1975

The President, Dr. M. G. MORRIS, in the chair.

The death was announced of Mr. H. J. Turner.

EXHIBITS

THE PRESIDENT — Larvae of *Cupido minimus* Fuess. (Lep., Lycaenidae) captured at Porton Down, Wilts., earlier that day.

Mr. C. O. HAMMOND — A female of the very rare *Oxycera dives* Loew (Dipt., Stratiomyidae) taken at the Pass of Killiecrankie, 7.vii.75. In Britain it is found only in Scotland and is also rare on the continent. Two others were taken by Mr. P. J. Chandler some 400 yards further along the Pass on the same occasion.

Mr. E. P. WILTSHIRE — Three males of *Gluphisia crenata* Esp. (Lep., Notodontidae) taken at light in a poplar plantation in July, near Le Havre, France, and three males of *Thaumetopoea processionea* L. (Lep., Thaumetopoeidae) taken at light near oak woods, also near Le Havre, in August. The former is considered now extinct in England, only a few specimens of it being known; the latter is not a native of England but odd specimens occasionally reach this country.

Also two species of recently caught English moths: *Stauropus fagi* L. (Lep., Notodontidae) taken in Cliveden Woods, Bucks., 26.vi.75, newly hatched on a hornbeam trunk. This species is common in some Chiltern beech woods not far from this locality. The English form seems to be more melanic than the European. Three examples of *Cnephasia interjectana* Haw. (Lep., Tortricidae), a very common polphagous moth, bred in June from *Scrophularia nodosa* L., Cuxton Woods, Kent. Cocoons and empty pupal cases were also exhibited.

COMMUNICATIONS

Dr. C. G. M. de Worms described his recent visit to the Sierra Nevada and some of the Lepidoptera, Flora and other entomologists that he had seen there.

Mr. E. H. Wild wondered why sparrows did not eat pugs around light traps whilst eating other species.

There was a discussion on the role of wood ants as predators.

Dr. P. A. Boswell showed colour slides taken of members at the 1974 Annual Exhibition. He also showed slides, on behalf of Mr. F. V. L. Jarvis, which showed aberrations and races of *Aricia agestis* D. & S. obtained during his breeding experiments.

'THE FORD DONATION' IN THE SOCIETY'S COLLECTION

Some years ago I looked over the aculeate Hymenoptera in the Society's collections. The two main sources of the specimens were G. E. Frisby and 'The Ford Donation'. The former collector is well known but I have been unable to trace the source of the latter. Mr. A. E. Gardner could not help, can any other member? Each specimen bears one single manuscript label, presumably written specially when the specimens were incorporated, the normal capture data, the identification and the phrase 'ex Ford Donation'. Most of the specimens were taken in the New Forest area about the turn of the century.

One specimen is of particular interest. It is a 10 mm long female of the spider-hunting wasp *Priocnemis propinquus* (Lepeletier) labelled 'Lyndhurst ix.99'. This must be the larger of the two specimens on the strength of which F. D. Morice added the species to the British List in 1901 (*Ent. mon. Mag.*, 37: 247-249), although the date quoted was August 1899. These two remain the only British caught specimens. I do hope that someone can enlighten me on the history of this interesting collection.

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20 Gore Court Road,
Sittingbourne, Kent, ME10 1QN.

Dr. M. R. Shaw of the Department of Zoology, University of Manchester, Manchester 13, would welcome parasitic Hymenoptera reared from identified lepidopterous and other hosts for research purposes. Would anyone willing to help please contact him for further details.

NOTES ON THE BRITISH STATUS OF THREE UNUSUAL ACALYPTERATE FLIES (DIPTERA)

by PETER J. CHANDLER

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The larger format of the second edition of *Flies of the British Isles* by C. N. Colyer & C. O. Hammond (1968) enabled the insertion of a further excellent plate (*Figs. 5 and 6 of Plate 50*), specially prepared by Mr. Hammond to illustrate two rather distinctive slender bodied Acalypterate flies, *Rainieria calceata* (Fallén) (Micropezidae) and *Megamerina loxocerina* (Fallén) (Megamerinidae).

Together with a third species, *Tanypeza longimana* (Fallén) (Tanypezidae) these flies form a curious assemblage of isolated 'acalypterates', each with no close relatives in the British fauna. These three species, all described from Swedish types by Fallén, have ceratin features in common, not least that they tend to elude discovery by the collector. By and large, they are found in wooded country containing mature or decayed trees and it appears probable that they are dependent for their larval development on decaying wood. Their biology has not been studied.

In recent years I have met with all these three species and here give an account of my observations on them, at the same time summarising what is known to date of these flies as British insects.

RAINIERIA CALCEATA (FALLEN)

The extraordinary appearance of this fly is well shown by Mr. Hammond's figure in the above mentioned work. The very slender body is shining black while the wings are brown tipped and bear a brown pre-apical band. The very long legs are black with distinctly white banded front and hind tarsi. This is the only European representative of the subfamily Taeniapteriinae, which is best developed in the tropics.

R. calceata was first recorded in Britain by Donisthorpe (1930a and b) who obtained twenty-five or more specimens in Windsor Forest, Berks. It has since been obtained in either the Forest or Great Park by several other collectors, including Messrs. W. O. Steel and G. E. Woodroffe (specimens in the Manchester Museum and in the Parmenter collection, now in the British Museum (Nat. Hist.) collection), Mr. P. Skidmore (Doncaster Museum), Mr. C. O. Hammond and Mr. A. A. Allen (private collections). Donisthorpe's original specimens are in the British Museum (Nat. Hist.) and in the Hope Department, Oxford University Museum.

Donisthorpe found the fly on a fallen beech trunk and Mr Hammond's capture on 7.viii.1953 was on a beech log. Although no proof has been provided, it seemed very likely that the fly is one of the many interesting insects which develop in the decaying beech trees of Windsor Forest. I have often searched for *R. calceata*, which has been collected from June until August, but did not find it until 3.viii.1974, when at 12.15 p.m. on a sunny afternoon I came across a single female flying up and down a standing unshaded dead beech trunk in the Highstanding Hill area of Windsor Forest. The tree was broken off at a height of 15 ft. and much of the bark was missing, the exposed heart-wood showing beetle exit-holes in use by various aculeate Hymenoptera.

This fly was taken when it alighted on the trunk but no other examples could be found in the vicinity. Later in the afternoon, however, I returned

to this tree and at 3.45 p.m. two further examples were found at rest lower down the trunk. The first of these was thought to be a male as it was a little less than 8 mm in length while the first female was 12 mm long, but on capture it was found to be another female. Shortly afterwards, the third specimen, a male slightly over 8 mm long, was discovered. The flies waved their front legs in the air while running about on the trunk, causing the white tarsal bands to flash in sunlight.

Although this is my only experience of *R. calceata*, Mr. A. A. Allen tells me that he has found the species widely in the Great Park in recent years so that it is still evidently well established in the area. It seems extraordinary that such a striking insect should not have been found in other British localities.

TANYPEZA LONGIMANA (FALLEN)

The Tanypezidae are a small family, mainly Neotropical (over twenty species), with two Nearctic and one European species. The latter is our *T. longimana*, which may be easily identified although it is less striking than the two species dealt with here which Mr. Hammond has previously illustrated. It is again predominantly shining black, shorter and broader bodied (6-8 mm long) than the other two species, with silvery markings on the head and thoracic pleura. To facilitate recognition of this insect, which might easily be overlooked in the field, Mr. Hammond has very kindly provided a freshly executed figure for publication here (Fig. 1), based on one of my specimens recorded below.

Collin (1945) quoted only the two records previously published by Morley & Atmore (1915), both from Suffolk (Tostock Bungay, vii.1899, collected by Mr. Tuck; West Stow, 26.vii.1913, collected by Col. Nurse). These specimens are both preserved in Collin's collection in the Hope Department at Oxford; he never took the species himself. *T. longimana* was unrepresented in the British Museum (Nat. Hist.) collection until Mrs. M. C. Cogan took one female at Silchester Common, Hants., 29.vii.1971 on vegetation by a stream. The only other British record of which I am aware is by Cole & Wills (1973) from Monk's Wood, Hunts., where it is said to have been taken on 17 and 28.vii.1972 by Dr. M. W. Service. No comment was made by them on the importance of the record but an asterisk indicated that the species was unknown elsewhere in the vice-county.

I was, therefore, somewhat surprised to find three females of the fly in the Water Garden at Leckford, Hants., 30.vi.1974, during a brief bright spell on a very overcast afternoon. One was observed, waving its wings and running over vegetation three feet from the ground at the edge of carr woodland close to the bank of the River Test. When it was recognised as something unusual, the surrounding area was swept and two more were obtained in this way, together with a specimen of the uncommon black Tipulid *Gnophomyia lugubris* (Zett.), a well known rotten wood feeder. All were found amongst vegetation growing over a rotten willow log, which may be the breeding site of both species.

MEGAMERINA LOXOCERINA (FALLEN)

This species, as Colyer and Hammond (*op. cit.*) remarked, resembles an Ichneumonid wasp in form and behaviour while running about on the foliage of shrubs. It is far more widespread in this country than the two species dealt with above and is known from many localities in southern England, north to Whalley, Lanes. and Keighley, West Yorks., with an outlying

locality at Melkinthorpe in Westmorland. There are no records from Wales, Scotland or Ireland and most localities are in old woodland areas except in the London suburbs, where it occurs in park and gardens.

The accompanying map (*Map 2*) shows the distribution as far as I have been able to ascertain of *M. loxocerina* in Britain. The records utilised are mostly based on actual specimens in the collections of the British Museum (Nat. Hist.), the Hope Department of Entomology, the Cambridge University Museum, Manchester Museum, Leicester Museum, Nottingham Museum, Ipswich Museum, Reading Museum, the H. W. Andrews collection (British Entomological and Natural History Society) and the private collections of Mr. A. A. Allen, Mr. E. A. Fonseca, Mr. C. O. Hammond and the author. A few published records, for which no supporting specimens are available, are also included as there seems little likelihood of the identifications having been wrong.

The greatest concentration of records is from the home counties, which also possess the greatest concentration of old woodland sites, but most 10 km squares plotted represent single localities. The present records indicate a very clear cut western limit to the distribution but this is more vague in the east of the country. It also appears to be absent from the southern midlands and Wiltshire, where Dr. C. M. Andrewes has informed me that he has not found the species. It should be noted that Diptera were extensively collected by Mr. C. H. W. Pugh in Shropshire and in Cornwall by the Rev. A. T. Thornley and they did not obtain *M. loxocerina*, which may therefore be genuinely absent from districts to the west of this line. The Welsh dipterous fauna is, however, poorly known and I would not be greatly surprised if it was subsequently found in some favourable Welsh locality. The other map (*Map 1*) combines the British records of *R. calceata* and *T. longimana*, from which it can be seen that their localities are all within the known area of distribution of *M. loxocerina*.

There is a specimen of this fly in the Cambridge University Museum from Eversden Wood, Cambs., where it was reared from a pupa found under oak bark on 27.iv.1921, the fly subsequently emerging on 23.v.1921. This tends to confirm the probability that this species develops in decaying wood.

I first found *M. loxocerina* on 15.viii.1972, when a single male was seen sitting on sycamore foliage in mixed woodland near Longstock House on the Leckford Estate, Hants. Then at Pamber Forest, Hants. on 20.viii.1972 a pair *in copula* were observed flying in short hops over the top of bracken along a ride in oak woodland. I did not see the species again until 14.vi.1974 when a female was surprisingly seen on a sunlit garden hedge at Bromley, Kent at 6.00 p.m. This was doubly surprising as a few minutes before two specimens of the striking Tachinid *Mintho rufiventris lacera* Rondani, which I had not previously seen in the Bromley district, had been found on the same hedge. On the following day, a male of *M. loxocerina* was obtained running about on sunlit *Rhododendron* foliage in mixed woodland near the Rookery, also at Bromley, Kent. Another Kent (S.E. London) record was recently published by Allen (1974). On 16.vii.1972 several were observed running about on the foliage of a single elder bush in an open glade in Northaw Great Wood, Herts. by Mr. C. O. Hammond and Mr. A. E. Stubbs.

Apart from the above five localities, it might be worth noting the other localities where the species has to my knowledge been seen since 1970. Allen (*op. cit.*) also mentioned a capture at Windsor Forest, Berks., where

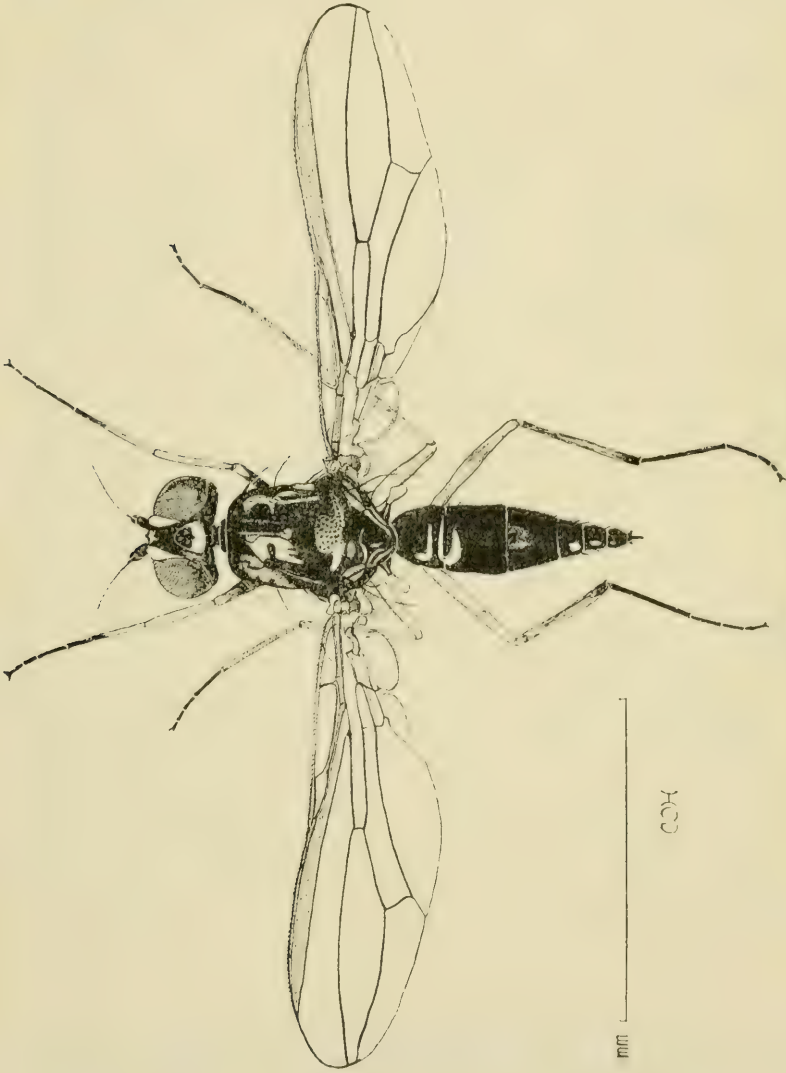
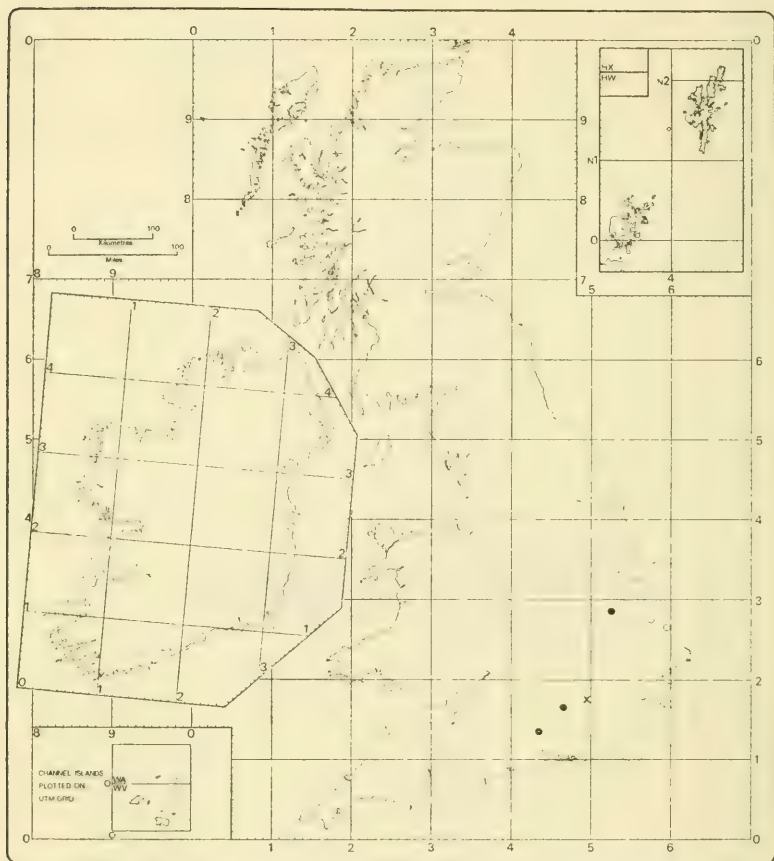


FIG. 1. *Tanypeza longinana* (Fallén).



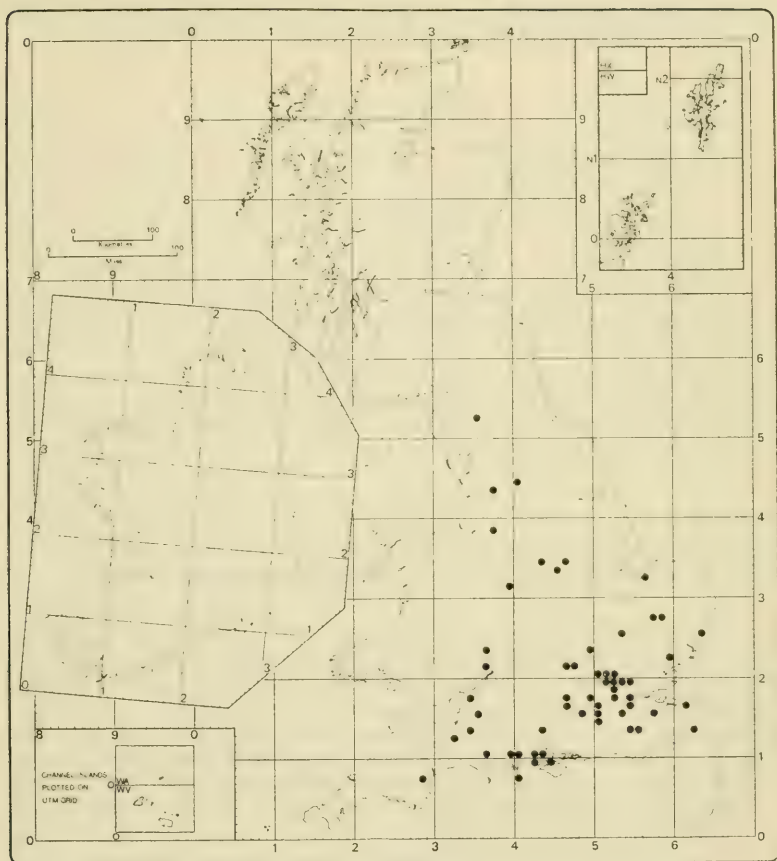
MAP. 1. British distribution of *Tanypeza longimana* (Fallén) and *Rainieria calceata* (Fallén).

O *T. longimana*, before 1914.

● *T. longimana*, after 1970.

X *R. calceata*.

it was previously collected by Mr. Hammond on 15.vi.1963, the last occasion on which Mr. Hammond had seen the fly before the Northaw record quoted above; Donisthorpe had collected it there in 1929 and 1940. Otherwise, *M. loxocerina* was collected at Newport (Parkhurst Forest) in the Isle of Wight by Mr. D. M. Appleton on 5.vii.1972. It was collected in numbers in the New Forest, Hants. between 1898 and 1904 by Mr. F. C. Adams and Col. J. W. Yerbury and I have seen more than thirty specimens so labelled of that vintage; it must still occur there and it is remarkable that no more recent specimens have come to light, the nearest being one from Downton, Hants., collected by Mr. D. Hollis, 4.ix.1962.



MAP 2. British distribution of *Megamerina loxocera* (Fallén).

M. loxocera has been taken consistently in every decade since these early New Forest captures but never again so commonly. Dates of capture span the period from 29th May till 22nd August.

ACKNOWLEDGEMENTS

I am indebted to Mr. C. O. Hammond for the figure of *Tanypeza longimana* here included. The maps were kindly provided by the Biological Records Centre at Monk's Wood Experimental Station. I would also like to thank the authorities of the Museums mentioned above for the opportunity to examine and use the data provided by specimens in their collections. Mr. A. A. Allen, Mr. E. A. Fonseca, Mr. C. O. Hammond and Mr. P. Skidmore who kindly enabled me to take their captures and observations into account. Finally, I am once again indebted to the administrators of the Leckford Estate, where two of the three species

treated here were obtained, for the opportunity to collect and study the Dipterous fauna as part of the faunistic survey in progress there.

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LONGEVITY IN THE ADULT FEMALE RANNOCH BRINDLED BEAUTY (POECILOPSIS LAPPONARIA BOISDUVAL)

From a batch of pupae of this species which had overwintered for the second year a female emerged on 1.iii.75. It remained in the same position without movement of any kind until 21.iii when a male emerged, when it changed position slightly but no mating occurred.

A second male emerged on 28.iii and mating took place on 29.iii. Egg laying commenced 30.iii and continued intermittently for eight days. The insect died on 22.iv.75, a life span in the adult state of almost eight weeks, which seems an exceptional time for a wingless female. The eggs were infertile.

K. G. W. Evans

POMPILID-LIKE APPEARANCE OF MACROPHYA RIBIS (SCHRANK), (HYM., TENTHREDINIDAE)

At 5.00 p.m. BST on 25.vi.1975 I was examining a recently fallen oak trunk at Hertingfordbury, Herts. in hot sunshine. What I took to be a black pompilid wasp was rushing about with halting movements and quivering antennae, taking short flights and examining the bark with apparent interest. I was surprised upon capturing the insect to find it to be a sawfly, *Macrophya ribis* (Schrank). It continued to show the same, unsawfly-like pattern and speed of movement in a specimen tube, even in dull light and lower temperatures at other times of day.

R. W. J. Uffen

**OBSERVATIONS ON *LYSANDRA CORIDON* PODA (LEP.,
LYCAENIDAE) COLONIES AT TWO SITES IN GLOUCESTERSHIRE
USING MARK, RELEASE, RECAPTURE METHODS**

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INTRODUCTION

Lysandra coridon Poda (Chalkhill Blue) is a typical member of the fauna of limestone grassland in southern England. Its habitat in England is a semi-natural one and the grassland where it is found was traditionally maintained by sheep grazing. However changes in agricultural practices over the last century led to a reduction in the numbers of sheep and the increasing importance of the rabbit in the grazing regime. Where grazing is removed the grassland quickly reverts to scrub and under these conditions the larval foodplant *Hippocrepis comosa* L. (Horseshoe Vetch) cannot survive. An early indicator of the lack of grazing is the invasion of the turf by coarse grasses, and this also leads to the disappearance of *H. comosa*. The removal of grazing pressure following the myxomatosis pandemic of the mid-1950s largely accounts for the recent decline in *L. coridon* in southern England. In the past the ploughing up of limestone grassland led to its disappearance from many sites. At one time it was more widespread and its range extended to the north-west of England (South, 1941). The cause of its disappearance from northern England has not been explained, but a climatological factor may be involved.

The disappearance of *L. coridon*, its habitat and other limestone grassland butterflies has led to a great deal of attention being paid to the conservation of the remaining areas of limestone grassland. However few attempts have been made to estimate population sizes of *L. coridon* and relate them to habitat conditions. Frazer *et al* (1957) and Davis, Frazer and Tynan (1958) estimated the numbers of *L. coridon* at two sites in Kent. These sites were on the chalk of south-east England; until now no work has been done on sites on the Oolitic Limestone of Gloucestershire.

In an attempt to fill this gap I estimated the numbers of adult *L. coridon* at two sites in Gloucestershire in 1971. The results shown below provide a comparison between colonies at two contrasting sites and also suggest that at some sites in England female *L. coridon* may aestivate.

SITE DESCRIPTIONS

(a) MIDGER WOOD NATURE RESERVE

This woodland reserve in the South Cotswolds includes a small area of limestone grassland occupying the south and south-east facing slopes at the head of a small valley. The slope of the ground ranges from 5°-30°, but all of the south-east facing slope is between 25° and 30°. The site is at an altitude of 500 ft O.D. and occupies 5.4 acres. The frequency of vascular plants in five 50 cm square quadrats placed randomly on the south-east facing slope is shown in Table 1. At the time this work was carried out oak and hazel scrub were encroaching on to the site. The growth of the scrub is now being controlled. There is an increasing population of rabbits at the site which is otherwise ungrazed.

(b) COALEY PEAK NATURE RESERVE

This site is on a south-west slope of the southern Cotswold escarpment. The slope of the ground ranges from 15°-35°. The altitude of the site is between 600 and 700 ft O.D. and the site occupies 3.2 acres. The frequency of vascular plants in five randomly placed 50 cm square quadrats is shown in *Table 1*. The site is not grazed.

METHODS

The method of investigation was to capture, mark and release butterflies on a number of days over periods of about a fortnight. The number of marked butterflies subsequently recaptured was noted. The marking periods were limited to a fortnight in order to minimise disturbance to the habitat.

The butterflies were marked on the underside of a hindwing with quick drying cellulose nitrate paint (coloured model aircraft dope). (In practice this paint does not dry quickly enough and subsequent work with moths and butterflies has shown that alcohol-based felt-tip pens are more efficient markers.) The butterflies were caught in a nylon net with a large mesh (2 mm) and held inside the net so that the underside of the wing was in contact with the net. The paint was applied using a pointed wooden stick and one drop from the stick was allowed to pass through one of the holes in the net, thus limiting both the amount and area of paint on the wing. In this way the butterflies could be marked and released immediately after capture. The butterflies were marked to indicate the day of first capture and subsequent recapture.

The size of the population can be estimated from an analysis of the number of animals marked and the number recaptured. The data were analysed with the aid of a computer programme developed by Mr. C. E. M. Dale in the Zoology Department of Manchester University. This programme enabled estimations of population size to be made by four methods, those of Jackson (1939), Manly and Parr (1968), Fisher and Ford (1947) and Jolly (1965), although only the latter two methods are used in this paper.

Marking was carried out at two sites 11 km apart. The sites were Midger Wood Nature Reserve (butterflies marked from 14th-24th July, 3rd-21st August and 2nd-11th September) and Coaley Peak Nature Reserve (butterflies marked 4th-20th August).

RESULTS

(a) MIDGER WOOD NATURE RESERVE

At this site a total of 532 butterflies, 380 males and 152 females, were marked and released in three marking sessions lasting eleven, nineteen and ten days respectively. 162 males and 15 females were marked in the first session and of these 46 males and two females were subsequently recaptured. In the second marking session 62 males and eight females were recaptured out of the 210 males and 108 females marked and released. In the final marking session three males were recaptured out of eight released and seven females were recaptured out of 29 released. In order to save space the mark, release, recapture data are omitted from this account; copies of this data may be obtained from the author. *Table 2* shows the estimates obtained by Fisher and Ford's and Jolly's methods. The population estimates of males and females were calculated separately as it was thought that the sexes might behave differently. Because of the low numbers recaptured no estimates could be made of the number of females in the first marking

session or of the number of males in the last marking session.

The mean observed days survived was 5.9 for the males ($n=118$) and 5.0 for the females ($n=20$). The longest observed number of days survived was 20 days by a male first marked on 16th August and last recaptured on 6th September. The longest observed number of days survived by a female was 16.

(b) COALEY PEAK NATURE RESERVE

At this site a total of fifteen butterflies, eight males and seven females, was marked and released in one marking session which lasted seventeen days. Of these four males and two females were subsequently recaptured. Because of the low numbers involved the males and females were taken together and a population estimate was made for the combined sexes. *Table 3* shows the population estimates obtained by Fisher and Ford's and Jolly's methods.

DISCUSSION

A number of methods are available for estimating population sizes from mark, release, recapture data and their characteristics have been summarised by Sheppard and Bishop (1973). Two of these methods have been used in the present paper—the deterministic method of Fisher and Ford (1947) and the stochastic method of Jolly (1965). Sheppard and Bishop (1973) and Bishop and Sheppard (1973) conclude that for data, such as that presented in this paper, with low recapture rates the method devised by Fisher and Ford is more reliable. There are however some disadvantages to the method of Fisher and Ford. One of these is the use in the estimation of a constant survival rate. If the mark, release, recapture data is collected over a short period of time the use of a constant survival rate is not important. However if the data relates to a number of weeks then it is unlikely that the survival rate will remain constant and therefore the estimates obtained will be less accurate. In such cases it may be best to split the data, although this will lead to some loss of information. A further disadvantage of the Fisher and Ford method is that the length of the calculations required makes the production of estimates a tedious and protracted process even with the use of an electronic calculator. On the other hand the method of Jolly allows simple and rapid calculations of population size and daily survival rate. This is useful for the fieldworker who, using this method, can calculate his results at the end of each day and more easily plan the next day's work.

The data tabulated above show that for this work both methods give essentially similar results when showing trends in population sizes. There are, however, instances when considerable differences are found in the daily numbers estimated by the two methods, and this is a common problem when using more than one method of estimation. Nevertheless we can gain useful comparative information on differences between sex ratios, between sites and on change of population size with time. These are as useful items of information in the study of the ecology of this species as that unattainable goal, the absolute population estimate, and will be discussed further.

The Midger Wood data show the changes in population size and composition through the flying season of the butterfly. The experiment was suspended for two periods as the rather fragile habitat was showing signs of wear through tramping, a point that should be borne in mind by investigators. The first marking session shows a rapid build-up of the male population between 16th and 20th July and presumably this coincides with

Species	Coaley Peak	Midger Wood
<i>Achillea millefolium</i> L.	3	1
<i>Agrostis stolonifera</i> L.	1	—
<i>Blackstonia perfoliata</i> (L.) Hudson	—	1
<i>Brachypodium pinnatum</i> (L.) Beauvois	5	—
<i>B. sylvaticum</i> (Hudson) Beauvois	—	1
<i>Briza media</i> L.	2	5
<i>Campanula rotundifolia</i> L.	4	3
<i>Carex caryophyllea</i> Latourette	1	1
<i>C. flacca</i> Schreber	4	5
<i>Carlina vulgaris</i> L.	3	4
<i>Centaurea scabiosa</i> L.	1	—
<i>Cirsium acaulon</i> (L.) Scopoli	4	1
<i>C. arvense</i> (L.) Scopoli	—	1
<i>Clinopodium vulgare</i> L.	2	—
<i>Crataegus monogyna</i> Jacquin	—	1
<i>Dactylis glomerata</i> L.	3	1
<i>Festuca ovina</i> L.	3	5
<i>Fraxinus excelsior</i> L.	1	—
<i>Galium verum</i> L.	2	4
<i>Helianthemum chamaecistus</i> Miller	5	5
<i>Helictotrichon pratense</i> (L.) Pilger	—	2
<i>Hieracium pilosella</i> L.	2	5
<i>Hippocrepis comosa</i> L.	1	4
<i>Holcus lanatus</i> L.	2	—
<i>Inula conyza</i> DC.	—	2
<i>Knautia arvensis</i> (L.) Coulter	—	1
<i>Koeleria gracilis</i> Persoon	1	3
<i>Leontodon hispidus</i> L.	5	4
<i>Lathyrus pratensis</i> L.	2	—
<i>Linum catharticum</i> L.	2	4
<i>Lotus corniculatus</i> L.	4	3
<i>Medicago lupulina</i> L.	—	4
<i>Pimpinella saxifraga</i> L.	5	2
<i>Plantago lanceolata</i> L.	2	4
<i>Poterium sanguisorba</i> L.	4	5
<i>Primula veris</i> L.	—	1
<i>Prunella vulgaris</i> L.	—	1
<i>Quercus robur</i> L.	—	1
<i>Ranunculus bulbosus</i> L.	1	—
<i>Scabiosa columbaria</i> L.	1	4
<i>Senecio jacobea</i> L.	—	4
<i>Taraxacum officinale</i> Weber	3	1
<i>Thymus drucei</i> Ronniger	2	5
<i>Trifolium dubium</i> Sibthorp	1	—
<i>Viola hirta</i> L.	—	5
<i>Zerna erecta</i> (Hudson) Gray	5	5
Total species	33	37
Average height of turf	19.0 cm	5.2 cm

the male emergence. 163 males were captured during this period, compared with 14 females. The number of females caught was too small to allow the calculation of their population size. However they were present at the site from 14th July onwards.

In the second marking session sufficient numbers of both males and females were present to allow estimates of the population size of both sexes to be made. The male population shows a progressive decline over this time and this is reflected in the lower survival rates calculated by the methods of Fisher and Ford, and Jolly. The males would seem to be dying off at this time. At the beginning of the session the female population appears to be somewhat smaller than the male but between 11th and 17th August the estimated number of females in the population rises sharply so that there are many more females than males. *Fig. 1* shows the changes in the numbers of the sexes during this period. During the final marking session only eight males and 29 females were captured. The number of males captured was too small to allow the population size to be estimated. The female population could, however, be estimated and the estimates show small numbers present at this time but apparently with new (or unmarked) animals entering the population.

The figures presented above and illustrated in *Fig. 1* suggest a rather curious situation for they would appear to show that the majority of the females are not present in the population until the male population is well into its decline. Frazer *et al* (1957) shows a similar disparity in the peaks of the male and female populations with the male peak occurring at the end of July and the female peak occurring in mid-August. If such a situation were real then it would be extremely disadvantageous as the chances of males and females meeting would be much reduced. It was noted above that females were present at the beginning of the experiment, albeit in small numbers. Indeed a pair were found *in cop.* on 16th July. It is possible that the females are present in large numbers throughout this early period but are not catchable. Since these mark, release, recapture techniques can only estimate the size of the catchable element of the population, then if females were present, but largely inactive and hidden, their population size would be underestimated. It is tempting to speculate that the females emerge at the same time or shortly after the males, that they mate at this time and subsequently enter a period of inactivity or aestivation for three to four weeks. The emergence of the females from aestivation and subsequent egg laying flights could account for the apparent peak in female population in mid to late August.

Scali (1971) found a similar abnormal sex ratio amongst *Maniola jurtina* L. (Meadow Brown) populations in Tuscany. He was able to show that the females aestivated and that this involved a postponement of gonad development. In this species the period of aestivation corresponds to the hottest season of the year and the females emerge from aestivation after the rains

TABLE 1. The frequency of vascular plants in randomly placed quadrats at Midger Wood and Coaley Park Nature Reserves (5=present in all five quadrats, 4=present in four out of five quadrats, etc.).

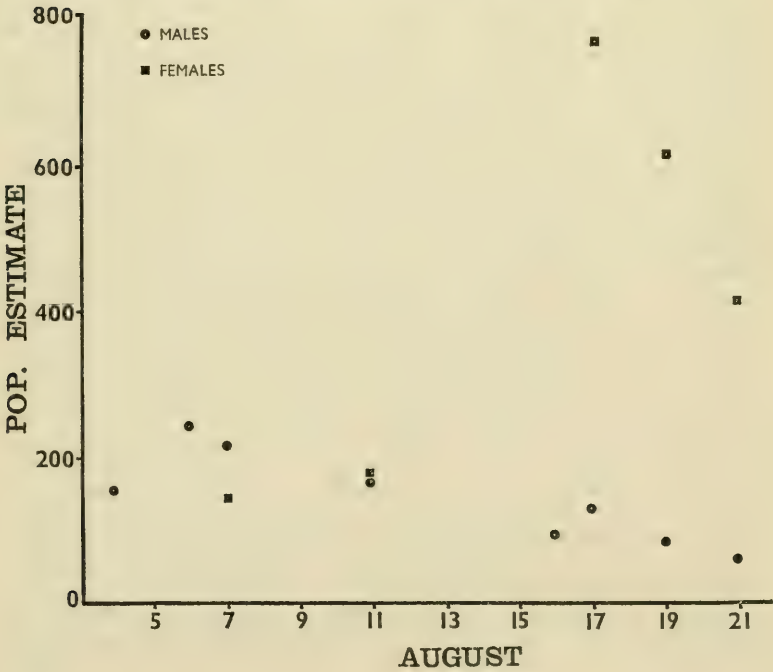
TABLE 2. Population estimates of *Lysandra coridon* adults at Midger Wood Nature Reserve in 1971 by the methods of Fisher and Ford (1947) and Jolly (1965).

	Fisher and Ford estimate		Jolly estimate			
Date	Males	Females	Males	Survival rate—males	Females	Survival rate—females
15th July	36	—	43	0.827	—	—
16th July	44	—	50	1.304	—	—
17th July	103	—	141	0.667	—	—
19th July	173	—	197	1.272	—	—
20th July	232	—	231	0.784	—	—
22nd July	265	—	246	—	—	—
24th July	374	—	—	—	—	—
mean survival rate (Fisher and Ford)	0.967	—				
4th August	157	INFINITY	245	0.407	—	—
6th August	245	INFINITY	160	0.758	—	—
7th August	217	142	188	0.434	144	0.219
11th August	169	176	115	0.622	42	1.25
16th August	94	INFINITY	126	0.936	—	—
17th August	134	778	141	1.155	990	0.847
19th August	86	571	157	—	1,220	—
21st August	63	414	—	—	—	—
mean survival rate	0.834	0.966				
4th September	—	16	—	—	8	1.25
5th September	—	31	—	—	40	2.063
6th September	—	32	—	—	110	0.25
8th September	—	50	—	—	23	—
11th September	—	45	—	—	—	—
mean survival rate	—	0.983				

TABLE 3. Population estimates of *Lysandra coridon* adults at Coaley Peak Nature Reserve in 1971 by the methods of Fisher and Ford (1947) and Jolly (1965).

Date	Fisher and Ford Males + Females	Males + Females Jolly	Survival rate Jolly
5th August	10	5	0.66
6th August	8	5	1.66
10th August	4	10	0.61
11th August	13	9	0.9
14th August	4	6	0.33
16th August	18	7	—
20th August	24	—	—
mean survival rate (Fisher and Ford)	0.95		

FIG. 1. Population estimates obtained by the method of Fisher and Ford (1947) for male and female *Lysandra coridon* at Midger Wood Nature Reserve, Gloucestershire, from 4th-21st August 1971.



at the end of the summer. In a similar way it is possible that optimum conditions for oviposition in *L. coridon* are not met with until the second half of August. Single-broodedness and adult aestivation would be one way of surviving until conditions for oviposition became favourable. An alternative method would be double-broodedness and pupal diapause during the unfavourable summer period. In this respect it is interesting to compare the life histories of the two *Lysandra* species found in this country. *L. coridon* is single brooded and thus typical of the northern and montane members of this group, whereas *L. bellargus* Rott. is double brooded and typical of members of the group with a southern distribution. Conditions in southern England could be considered transitional between those necessary for either single or double broodedness in *Lysandra* species. The summer in southern England is just long enough to allow *L. bellargus* to breed here, but so fine is the balance that the shortening of the length of the summer since the 1950s (Lamb, 1966) is probably the cause of the recent disappearance of *L. bellargus* from many sites in southern England (Muggleton, 1973). On the other hand *L. coridon* would have to survive what is, for single brooded species, a long summer season before conditions became suitable for oviposition. A period of aestivation would be a useful adaptation under these circumstances.

This situation is not repeated at Coaley Peak where throughout the period the site was visited equal numbers of males and females were found. This may be a reflection of the small size of the colony, alternatively it could result from the more exposed nature of the habitat—a windswept escarpment at 700 ft compared with a sheltered valley at 500 ft. The season available for the development of the early stages and adult flight at Coaley Peak would almost certainly be shorter than that at Midger Wood and thus there would be no requirement for a period of aestivation. It is interesting to note that Davis *et al* (1958) found that at a site they examined in 1956 there was a later emergence than at a nearby site investigated by Frazer *et al* (1957) the same year and that at the first site they also found an equal sex ratio at the end of the season. Davis *et al* points out that their site was less sheltered than that of Frazer *et al*.

Davis *et al* (1958) found a preponderance of male *L. bellargus* at the site they investigated and they remark that Frazer *et al* (1957) found a preponderance of males in a colony of *L. coridon* in each of two years. Although little published data is available, such abnormal sex ratios are frequently found by workers in the field and are usually attributed to inaccuracies resulting from the mark, release, recapture method as a result of low capture/recapture rates of females. However there is no reason why any of these methods should underestimate the female population providing the females are available for capture. Indeed low recapture rates would lead to an overestimate of the population size rather than an underestimate. However there is no evidence from the present study of an overall preponderance of males; indeed the reverse may be true. What is shown is that sex ratios change through the season and this may have misled some workers, although this could not explain the results of Frazer *et al* (1957) which were based on records made throughout the flying season.

The survival rates for the males and females at Midger Wood, as calculated by Fisher and Ford's method, for the peak activity period of each sex are remarkably similar, 0.967 for the males and 0.966 for the females. The survival rate for the two sexes combined at Coaley Peak is 0.95, which is very close to the Midger Wood value. Work on *Maniola*

jurtina in the Scilly Isles (Ford, 1965) suggested that colonies occupying a small site may have lower survival rates than those occupying a larger site. There is also circumstantial evidence that *Maculinea arion* L. colonies cannot survive for long in isolation (Muggleton and Benham, 1975). In both cases the lowering of the survival rate may be the result of a greater tendency of butterflies to leave small or isolated sites and fail to return or the result of an inherent weakness caused by inbreeding amongst the butterflies at a small or isolated site. The present data do not support these arguments. It may be that the difference in size between the two sites is not enough to make a significant difference in the survival rates. Alternatively the Coaley Park colony may not be sufficiently isolated from neighbouring colonies for the size of the site or inbreeding to be an important factor.

The small size of the colony at Coaley Park is worthy of note. The pooling of male and female data, necessary because of the small numbers involved, may introduce some error into the estimates. However if, as is suggested above, the males and females at this site are active at the same time then the evidence from Midger Wood suggests that the survival rate of the sexes will be similar and therefore pooling the data will give a legitimate result. Even if this is not the case the estimation still shows the difference in scale of the two colonies, and a discussion of this difference forms the remainder of this paper.

Whereas the Midger Wood colony is by Cotswold standards large and thriving, the colony at Coaley Park is one of the smallest in the Cotswolds and must be approaching the minimum size for viability. The recent decline of *L. coridon* in the Cotswolds and elsewhere is almost certainly the result of the invasion of the short turf of its habitat of coarse grasses and scrub and the subsequent disappearance of the larval foodplant *Hippocrepis comosa*. The two colonies investigated provide an excellent illustration of the situation. From Table 1 it can be seen that there is a greater frequency of coarse grasses at Coaley Peak and particularly of the invasive grass *Brachypodium pinnatum* (L.) Beauvois (Tor Grass) which is absent from the Midger Wood site. At Midger Wood there is a greater frequency of the small herbs and non-invasive grasses than at Coaley Park. The vegetation at Coaley Park is ungrazed and *B. pinnatum* is dominant over large areas. Furthermore the site is burnt each year in March and although the burn removes the *B. pinnatum* litter it encourages the survival of *B. pinnatum*, with its underground rhizomes, at the expense of the small herbs. *H. comosa* maintains a precarious existence at this site. It grows in one or two small clumps at the edge of a slightly sunken path; the burn passes over the top of this path without touching the *H. comosa*. The Midger Wood site supports a large population of rabbits and these together with the steepness of the slope and the shallowness of the soil maintain a short vegetation in which herbs predominate. *H. comosa* is spread throughout this vegetation.

Although care should be taken when drawing conclusions from one year's sampling (see Frazer, 1973), I think that in this case it is evident that the short, herb-rich turf of the Midger Wood site supports a far larger colony of *L. coridon* than the *B. pinnatum* dominated site at Coaley Peak. The lack of *H. comosa* must be the principal factor regulating the population size at Coaley Peak. The small size of the Coaley Peak colony shows that this species is able to survive in very small numbers at a site which is largely unsuitable for it. Although for how long this colony can remain

viable is not known, at present it represents a potential for expansion should conditions improve. However it is probable that the colony is not maintaining itself in isolation but is reinforced from time to time by the movement of butterflies from other sites along the escarpment. In the long run reinforcement from neighbouring colonies may be the telling factor in the butterflies' survival at this site.

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COLLECTING IN JORDAN, MARCH 1975

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Although I am planning a complete revision of the butterflies of Transjordan in collaboration with Mr. I. Nakamura sometime in the near future, it seems worthwhile to give some personal impressions of a brief collecting trip to this fascinating country.

During four and a half years in Lebanon I much regretted having been unable to collect in the neighbouring countries of Syria and Jordan. However, I had to give first priority to the groundwork for my monograph on the Lebanese butterflies (Larsen, 1974) and plans for collecting on the Syrian slopes of the Antilebanon in spring of 1974 were put to rest by the October War of 1973. I should add that this was not because any danger would be involved, but activities as unorthodox as butterfly collecting, an almost total lack of Arabic and strict security measures simply do not mix. In general Syria is a most hospitable and friendly country where the traveller meets no restrictions or undue problems. When the time came to leave the Lebanon for good, my wife, who had previously visited Jordan, convinced me we should make the trip, adding another 2,000 km to the planned 6,000 km trip to London. She was proved right, even though it was early in the season.

Jordan is not entomologically well researched. Graves (1925) and Hemming (1932) have published accounts on collections from Transjordan, but they were mainly formed by military and political officers whose opportunities for collecting were limited. The planned revision will involve study of some major, unpublished collections formed in the mid-1950s. The need for a comprehensive study of the Jordanian fauna is particularly important since it is the boundary between the Palaearctic and the Ethiopian regions.

Four distinct ecological zones were visited. The **plateau** on which the capital Amman and the major cities of Ramtha, Salt, Jerash, Irbid and Zerqa are situated basically supports the more adventurous species which inhabit the Lebanon and Antilebanon as well as the Judaeian hills. It extends as far south as Petra. The **eastern desert** has little of special interest, mainly showing a general decrease in butterfly life. However, a number of species adapted to desert conditions appear here without being found on the plateau proper (e.g. *Pontia glauconoma glauconoma* Klug, *Apharitis myrmecophila myrmecophila* Dumont, *Philotes abencerragus nabataeus* Hemming, and *Spialia doris amenophis* Reverdin). The **southern desert**, from Maan to Aqaba, differs dramatically from the eastern desert in its frankly Ethiopian character. Its butterfly fauna is poorly known. The last zone is the justly famous **Jordan Valley**, situated below sea level, locally known as the Ghor. The flora and fauna have a strong Ethiopian character and contain relict species not even found in the southern desert, such as *Colotis chrysonome chrysonome* and *Iolaus jordanus jordanus*. The valley itself is strongly cultivated and the best collecting spots are in the valleys leading down to the Ghor itself.

We left Beirut on March 13th at the crack of dawn in order to avoid the morning rush hour which turns the traffic of Damascus into a barely controlled chaos. By mid-morning we had the first round of involuntary collecting at the Jordanian border post at Ramtha. My wife shares her

name with a notorious hashish smuggler who spent some years in Lebanese jails, and inter-Arab cooperation had placed her on the Jordanian black-list. The only butterflies recorded were *Archon apollinus bellargus* Staudinger, *Pieris brassicae catoleuca* Röber, *Euchloe belemia belemia* Esper and *Euchloe crameri crameri* Butler. The two last were plentiful, in marked contrast to Lebanon where *crameri* especially is very scarce.

Immigration finally resolved to send us to police HQ in Amman for further investigations (where on arrival a very polite colonel quickly changed my wife's status from non-grata to grata, but still at the loss of valuable collecting time). En route we collected especially in the vicinity of Jerash where there is excellent collecting ground, and we noted all the species seen at Ramtha, as well as *Allancastria deyrollei eisneri* Bernardi, *Gonepteryx cleopatra taurica** Staudinger and *Syrictus tessellum nomas** Lederer. I was especially pleased that the *Allancastria* substantiated my theories on the distribution of *cerisyi* and *deyrollei* (Larsen, 1973).

From Amman we followed the fast desert road aiming for Aqaba. It was getting late, and little of interest was seen. In a shallow Wadi some 25 km south of Amman we again took *apollinus* and *belemia*, as well as the first *cardui* and *daplidice* of the trip. We also found some clumps of black iris, *Oncocyclus*, which we were happy to take back to Dr. Chaudery of the American University of Beirut who is working on the genetics and phylogeny of this incredible group of flowers. A hard drive brought us to Aqaba by ten at night.

Aqaba is a splendid spot, differing from anything I have seen in the Middle East. The sea is deep blue and crowded with fish and coral reefs. The rim of mountains to the north seems devoid of vegetation and shimmers in all hues from light pink to almost black. The flora is totally Ethiopian, the *Acacia* being most prominent. However, butterflies were almost totally absent. We saw two worn *cardui* and my wife caught a battered *Azanus jesous gamra* Lederer. A mango tree in town had a large Lycaenid buzzing around the top, probably a female of *Deudorix livia livia* Klug. The main square and most major roads in town were bordered by *Lantana* in full bloom, entirely devoid of butterflies—a certain sign that very few were about.

The adjacent area was also unproductive. A full day between Aqaba and Wadi Rum (of Lawrence fame) was a delightful experience with many birds seen and flocks of grazing camels everywhere. The only butterflies were an unidentified *Melitaea* (probably *trivia*), some *cardui* and a single female of *Zegris eupheme* which seems neither to be ssp. *dyala* Hemming nor *tigris* Riley. Despite careful search no more were seen. Entomologically Aqaba is probably best from September to January in years with some rain. Many eremic species can aestivate for several years in the pupal stage.

On the 15th we set off north toward Petra, stopping frequently in the southern desert. Although many plants were flowering the results were as disappointing as the day before. Even areas rich enough to support a giant *Ferula*-type plant carried no butterflies whatever. Finally, at a sandy spot 15 km south of the plateau scrap, some whites were flying among a profuse growth of fragile annual Crucifers. They proved interesting indeed, and we found three *Pontia glauconome glauconome* and half a dozen *Euchloe falloui falloui** Allard.

* Species not previously recorded in print from Transjordan.

On the scarp itself we found *Elphinstonia charlonia elisabethae* Hemming in quantity; the contrast between race *penia* from Lebanon and this form is very marked. Incredible though it may sound, *penia* and *elisabethae* are geographically isolated, the former reaching Mt. Hermon, the latter having its northern boundary in the area around Jericho. Some *ausonia* and *daplidice* were also present; a *Melitaea* was unfortunately missed. The view from the scarp towards Wadi Rum is breathtaking and the government has built a rest house at Ras Naqab which should be an excellent base for natural history excursions to the interesting shatterbelt between southern and eastern desert and the plateau itself.

Petra, which we reached by two in the afternoon, is one of the most stunning sights I have seen anywhere. The exit from the dark, narrow, winding Syq to the view of the monumental pink Treasury, el Khazneh, is one never forgotten. Entomologically it was a great disappointment. Apart from a single *charlonia*, only *brassicae*, *rapae*, *daplidice* and *cardui* were common, the occasional *Colias croceus croceus* Fourcroy and *Carcharodus alceae alceae* Esper at least having the distinction of not being seen before on the trip. Fresh female *cardui* were ovipositing on the *Cradaus* which abounded everywhere, the result of severe overgrazing which may account for the disappointing results. We were especially sad not to find *Iolana alferii* Wiltshire, known from this locality.

The following day we left by the King's Highway towards Amman, passing strings of Nabataean and Greco-Roman monuments in addition to the magnificent Crusader castle at Kerak, overlooking the Dead Sea. We collected in a narrow Wadi near Tafila, on the slopes of Lawrence's initial disorganised and tumultuous retreat after an engagement with the Turks, and in the Wadi Hasa some kilometres further on. Here butterflies were almost as plentiful as in Lebanon and more than 20 species were taken. The greatest trophy was a nice series of *Zegris eupheme uarda* Hemming, a species I had wanted since I started collecting more than 20 years ago. Among species not taken elsewhere were *Melitaea deserticola macromaculata* Belter (its flight high above the ground as in the case in Lebanon), *Ypthima asterope asterope* Klug, *Lycaena phlaeas timeus* Cramer (for a while optimistically thought to be *Tomares nesimachus* Oberthür till it was finally netted), *Lycaena thersamon kurdistanica* Riley, *Polyommatus icarus zelleri* Verity, *Zeziria karsandra karsandra* Moore and *Zygaena graslini graslini** Lederer. A thorough investigation of this valley in its entire length from the eastern desert to the Dead Sea is high on my list of preferences on how to spend an idle week and would repay itself handsomely. The even more spectacular Wadi Mujib further north would be equally interesting.

We did not collect in the Ghor itself; it has been well exploited and we were more interested to inspect a butterfly collection, the existence of which had been pointed out by Professor Harcourt of the American University of Beirut. It turned out to be a large well-labelled collection formed by the late Trevor Troughton with many interesting specimens. Messrs. Labidi and Younis of the Department of Agriculture deserve much credit for having kept it in immaculate condition since 1954 under very difficult climatic conditions, and I look forward to reporting fully on this collection.

The weather was poor when we set out for Beirut on the 17th. A stop at Jerash revealed a well preserved and well laid out Roman temple compound; although the individual structures were hardly as impressive as those in

Baalbek and Italy, the degree of preservation and the homogeneity of the ensemble more than compensates for this. The surrounding countryside confirmed itself as an excellent collecting ground, though the only new species taken was *Lasiommata megera emilyssa* Verity.

Coming straight from the 29°C of the Ghor we were unprepared for the start of a snow storm near Damascus, and the trip over the Antilebanon and the Lebanon was positively hair-raising. We arrived in Beirut at 10 in the evening—to start packing for London the next day. The visit to Jordan had been too early in the season and much too short. Nonetheless, 27 species were recorded and a visit in April or early May seems very worthwhile, as often in the lower parts of the Middle East butterflies are not all that plentiful and very localised. It is worth staying a while in a good place, rather than rushing madly about looking for new spots. If I were to return my priorities would be to research in detail the Wadi Hasa and the Wadi Mujib to their lower levels and to search the lower reaches of the Wadi Musa where it exits from the Petra temple complex.

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AN EARLY CAPTURE OF ECTOEDEMA TURBIDELLA ZELLER IN BRITAIN

by A. M. EMMET

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It is of interest to record that there is a long series of this species in the Bankes Collection at the British Museum (Natural History). They are amongst unidentified material and are labelled '*Nepticula* ?sp. (from a British Collection)'. No further data are given. This vagueness indicates that the specimens were already old and their history lost when Bankes acquired them.

Ectoedemia turbidella was added to the British List when the late L. T. Ford recorded finding imagines commonly on tree trunks on Stanmore Common, Middlesex (Ford, 1950). Believing it to be an undescribed species, he named it *Nepticula marionella* in honour of his wife, and it was only later that it was found to be conspecific with *turbidella* (a name formerly attributed to Herrich-Schäffer but research has now shown that Zeller is the correct author). Subsequent records are for Wicken Fen (Emmet, 1970) and Chippenham Fen (Emmet, 1971), both in Cambridgeshire, and for Woodford, both Essex (Agassiz, 1972). Since there are no other records, it is a pity that the locality of Bankes' specimens is unknown.

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THE OCCURRENCE OF PSEUDOSCORPIONS IN THE NESTS OF BRITISH BIRDS

by PHILIP E. JONES

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INTRODUCTION

Birds' nests form a temporary habitat in which pseudoscorpions can establish themselves and breed. Most species of pseudoscorpion prefer a high humidity and warm temperatures. Such favourable conditions are found while nests are in use by birds. The temperature of nests, particularly when a brood is present, is considerably higher than that of their surroundings and there is no nocturnal fall. Not only do birds provide this favourable microclimate for pseudoscorpions, but they also provide warmth and nourishment necessary for the development of large numbers of mites and the young larval stages of insects, which can serve as food for the pseudoscorpions. It is possible therefore that during the breeding season pseudoscorpions may occur quite frequently and in large numbers in birds' nests. Once a nest has been abandoned by the birds however, temperatures will revert to normal and the pseudoscorpions will tend to move away to more favourable neighbouring habitats, e.g. decaying wood, vegetable/hay/straw refuse. It is possible that certain species of pseudoscorpion can survive for much of the year in the nests of birds such as sparrows and pigeons, as these often use their nests for roosting throughout the year.

Legg (1975) suggests that habitats such as dead trees and animal nests (presumably this can be extended to include birds' nests) are highly unlikely to be exploited by those pseudoscorpions which are unable to store sperm for prolonged periods, unless such a habitat is in close proximity to a stable and permanent one. The following records, collected as part of a scheme to map the distribution of British pseudoscorpions, show that most of the species found in birds' nests belong to the three families Cheiridiidae, Chernetiidae and Cheliferiidae. The Chernetiidae and Cheliferiidae have spermathecae and are able to store sperm for prolonged periods. Thus a single fertilized female of one of these families on reaching a suitable but isolated habitat, e.g. a bird's nest, can initiate a population. The Cheiridiidae possess spermathecal pockets and can only store sperm temporarily. The Neobisiidae and Chthoniidae, on the other hand, are unable to store sperm for prolonged periods and occur infrequently in temporary habitats such as birds' nests.

It is most likely that pseudoscorpions are brought into nests in the first instance on the bodies of parasitic or nidicolous flies — an association known as phoresy — although it is possible they could also be brought in on nest-building materials, such as dried grass or straw, or even on the bodies of the birds themselves. About 55% of the world species of pseudoscorpion which have so far been shown to demonstrate phoresy belong to a single family, the Chernetiidae, and 12% to the Cheliferiidae (Legg), the two families appearing most frequently in birds' nests in Britain.

SPECIES FOUND IN BIRDS' NESTS FAMILY CHTHONIIDAE

Chthonius ischnocheles (Hermann)

One specimen. 23.ix.1954. Churcham, Glos. In house martin's nest. (George, 1957).

- One male. 22.v.1960. Newcastle-upon-Tyne. Blackbird's nest. (Cotton).
Cheiridium museorum (Leach)
 Large number. vii.1877. Kirton-in-Kindsey, Lincs. In deserted sparrow's nest in ivy on groom's cottage. (Kew, 1901).
 1910-1915. Near Lichfield, Staffs. In an old bird's nest. (Carr, 1919).
 One specimen. 24.vii.1957. Churchdown, Glos. In nest of house sparrow. (George, 1961).
 7.xii.1959. Ashleworth, Glos. In nest of house martin, later occupied by sparrow. (George, 1961).
 One specimen. iv.1964. Near Rannoch, Perthshire. In nest of house martin at 1,150 ft (Cooper).
 One male. vii.1964. The Newarke, Leicester. From nest of feral pigeon. (Crocker).
 One male. ix.1966. Woodwalton Fen N.N.R., Hunts. In tree sparrow's nest under bungalow floor. (Crocker).
 Nine specimens. 26.vi.1967. Salisbury, Wilts. In nest of swift in roof of house. (Cooper).
 Two females. xii.1971. Belton, Leics. In old bird's nest (robin/house sparrow?) in dry stone wall. (Crocker).

FAMILY CHELIFERIIDAE

Chelifer cancroides (L.)

Woodroffe (1953), in his study on the insects and mites in the nests of certain British birds, recorded this species as being abundant in some pigeons' nests.

Rothschild and Clay (1952) note that it 'is a constant species in the nests of swallows and martins'.

FAMILY CHERNETIIDAE

Pselaphochernes scorpioides (Hermann)

Three nymphs. 17.vii.1952. Wytham Wood, Berks. Jackdaw's nest at 15 ft in an oak tree. (Gilbert).

Chernes cimicoides (F.)

One specimen. 4.xii.1973. High Halstow, Kent. In nest of grey heron. (Welch).

Toxochernes panzeri (Koch)

Two specimens. viii.1907. Beauport Park, Battle, Sussex. In an old starling's nest. (Butterfield, 1908).

One male. 5.viii.1940. Wickham, Kent. In an owl's nest. (Gilbert).

Two males, six deutonymphs, three tritonymphs. 17.vii.1952. Wytham Wood, Berks. In a jackdaw's nest at 15 ft in ash tree. (Gilbert).

Five specimens. 24.vii.1957. Churchdown, Glos. In nest of great tit. (George, 1961). 6

About 30 specimens. iv.1961. Box Hill, Ashurst Valley, Surrey. In nest (used previous year) in hole in tree. (Sankey).

vi.1970. Portaferry, Co. Down. Pigeon's nest in a old tower. (Legg).

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NOTES ON AN UNUSUAL COPULATION OBSERVED IN THYMELICUS SYLVESTRIS PODA (THE SMALL SKIPPER)

by MICHAEL PARSONS

(Hurst Lodge, Hurst Lane, Egham, Surrey)

INTRODUCTION

At 12.30 p.m. on 25th July 1975 (a hot sunny day) whilst surveying Swinley Park, near Bracknell, Berkshire, for the Nature Conservancy, I was walking down a ride of some length between two forest compartments of pine and birch. The ride was yellow with birdsfoot trefoil (*Lotus corniculatus* L.) and there were many meadow browns (*Maniola jurtina* L.), ringlets (*Aphantopus hyperantus* L.) (Lep., Satyridae) and small and large skippers (*Thymelicus sylvestris* Poda and *Ochlodes venata* Brem. & Grey) (Lep., HesperIIDae) flying about the low herbage and sedge.

On glancing at a white painted concrete post in the centre of the ride as I passed by it, I noticed three small skippers resting together in a triangular fashion (See Fig. 1).

On closer examination, the idea that all three were 'in cop', was confirmed. The sexes of the butterflies could not at first be determined as all three rested with their wings closed, and thus the sex bands on the forewings of the males could not be seen. It was therefore decided to take the skippers to be sexed later; however, due to the larger abdomen of the butterfly at the top of triangle, it was assumed that one female was 'paired' (if the same term can be applied to this situation) with two males.

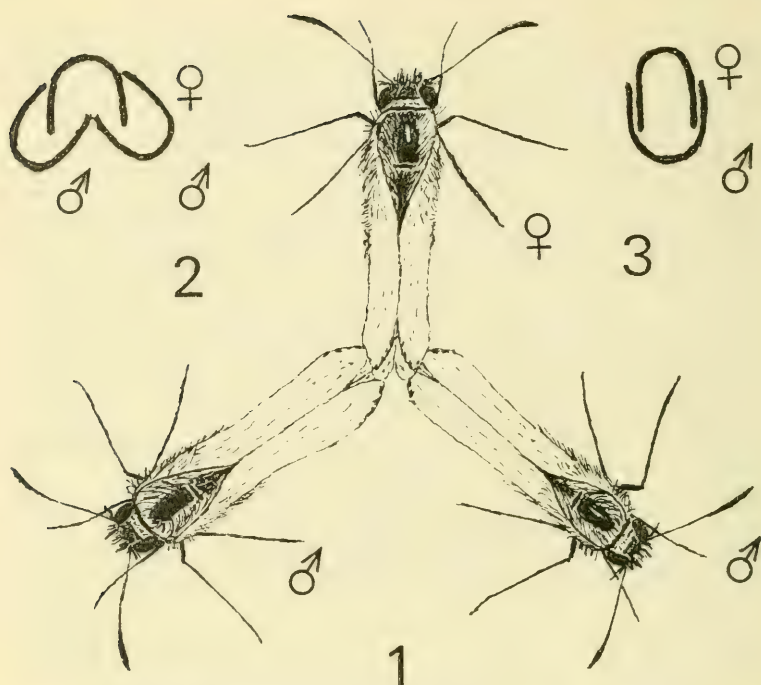


FIG. 1. Three small skippers copulating (one female, two males).

FIG. 2. Diagrammatic sketch of the claspers of the copulating trio. (N.B. this diagram does not show the exact position of the genitalia.)

FIG. 3. Normal pairing, based on the same diagrammatic representation.

CONCLUSION

How the combination of the *three* small skippers was brought about, one can only speculate. It could have been that the first two paired and then the third somehow joined them afterwards. The butterflies, when found, were all securely bonded, and the union, it seems, could only have been simultaneous, the genitalia only allowing for both males to pair at the same time to bring about the arrangement seen (Fig. 2) instead of the normal one (Fig. 3). The claspers of both males formed a tight fit either side of the female.

The author would be pleased to hear from anyone else who has witnessed similar behaviour in the same or other species of Lepidoptera, or any other orders of insect.

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A HISTORY OF THE BRITISH COLEOPTERA

(The 1975 Presidential Address by C. MACKECHNIE JARVIS)

"With Aristotle begins the real history of science . . ." so wrote Sir J. E. Smith, Founder of the Linnean Society, in 1788.

Now it is well known that the term Coleoptera is derived from two Greek words meaning "sheathed winged" but less well known that it was used by Aristotle ca. 350 B.C.

The other words used by the Ancients to denote beetles generally were *Scarabaeus* and *Cantharis*, but names with a more precise signification were *Cicindela* (the glow worm), *Buprestis* (the shining ground beetles), *Hydrocantharus* (the water beetles), *Staphylinum* (the devil's coach horse and its allies), *Melolontha* (the cockchafer), *Proscarabeo* or *Meloe* (the oil beetle) and *Cerambyces* or *Capricornes* (the longicorns).

The earliest surviving illustrations of beetles occur frequently in the hieroglyphic inscriptions of the Ancient Egyptians.

Replicas of scarabs in stone and other materials were worn as necklets and in finger rings for a variety of reasons (the scarab was an emblem of fertility). Those bearing the name of the King were issued to senior officials entrusted with authority to act in the royal name. The steatite scarab seal exhibited bears the royal premon of Amenophis III (ca. 1580 B.C.) and thus antedates Moses by about 60 years.

The ancient Egyptian name for the scarab was *Kheper*, a form bearing a remarkable similarity to the Old German *Kiefer* and Early English *Cefer* (M. E. *Chafer*). Quære: Did this word descend via Arabic in which the 'p' is aspirated to 'ph'?

Insofar as England is concerned, our history begins with the belated publication of the posthumous work of Thomas Moufet, '*Insectorum Theatrum*'.

An excellent account of the vicissitudes through which the ms. of this work passed is given by Lisney (1960). It was originally planned by Conrad Gesner (1516-1565) of Zurich as a sixth volume of his *Historia Animalium*. It was revised and extended by Moufet (1553-1604) and published by Theodore Mayerne in 1634, about 70 years after the death of its prime author.

This folio work written in Latin extends to 326 pages, of which about 90 deal with the Coleoptera. It is particularly valuable for its references to earlier authorities and, being copiously illustrated, it is possible to identify many of the more conspicuous insects depicted. The book contains the first reference published in England to the bed bug *Cimex* and perhaps the only descriptive reference to and figure of the rare and remarkable four-legged *Bombyx*!

Our next landmark is the publication of John Ray's '*Historia Insectorum*' in 1710. The Rev. John Ray, F.R.S., who was best known as a botanist, died in 1705 and his ms. was published by the Royal Society. The book incorporates the work of Ray's former pupil and friend Francis Willughby, F.R.S., left unfinished at his premature death in 1672.

These works separated the species descriptively—thus the stag beetle was referred to by Ray as '*Scarabaeus maximus platyceros*' and the Goat Chafer or Musk Beetle '*Scarabaeus capricornus dictus, major viridis odoratus*'.

We all know that the system of binomial classification was adopted and publicised by Linnaeus and that 1756 saw the appearance of the 10th Edition of his *Systema Naturae*, which is taken as the starting point for present-day nomenclature. The Coleoptera in that work, excluding the earwigs and other insects originally grouped under this heading, number 586, species of European provenance amount to 441, of which 410 are now recognised as British.

It is not generally realised that Linnaeus identified numerous insects described in the earlier works of Mouflet, Ray and others and gives the synonymy, but 424 species of Coleoptera were then new to science.

The first authoritative work on the British fauna based upon Linnaeus is that of Thomas Marsham, who in 1802 published his '*Entomologia Britannica*, Vol. 1 Coleoptera Britannica' in which 1,307 native species are described.

Marsham owed a great deal to the Rev. W. Kirby and to some 20 others whose help is freely acknowledged in his Preface.

Marsham was a founder member of the Linnaean Society and Secretary from 1788 to 1798. He became Treasurer in that year and held this office until 1816. He died in 1819 in straitened circumstances, having parted with his collections shortly before his death. The collection of British Coleoptera which formed the basis of Marsham's book was purchased by J. F. Stephens and was incorporated into his own collection, now in the British Museum.

The Marshamian specimens are identifiable by round yellow tickets and when the species is described in '*Entomologia Britannica*', by a number as well.

He was also the author of '*A System of Entomology*' included in Hall's Royal Encyclopaedia of 1788. An off-print probably mounted by Marsham and provided with a title page dated 1796, formerly in the libraries of J. F. Stephens and H. T. Stainton, is now in the library of the Royal Entomological Society.

Thomas Marsham was a man of good education who professionally was Secretary to the West India Dock Company for many years. We do not know as much about him as we would like and it appears that no biographical notice has been traced.

My information, derived from letters in the files of the Linnean Society and the Kirby ms. is that he married a Miss Symes of Ufford, Northants (if I read Kirby aright). There were two daughters of the marriage but no son. Marsham became an officer in the Volunteer Corps, the Home Guard of 1802, as we learn from a letter of Alex MacLeay to Kirby dated 14th November, 1802: 'I do not believe that I have seen our friend Marsham four times since the beginning of the war. This is my fault in some degree, but not entirely, for he is wholly taken up with his volunteer corps. Mrs. Marsham says she is more bored with soldiering than she ever was with insect hunting. In fact, our friend thinks of nothing but the repelling of our daring foe, and the sticking of Frenchmen instead of the sticking of insects.'

It seems almost certain that Marsham's financial troubles originated in the heavy losses incurred on the publication of the '*Entomologia*' and his Vol. 1 was destined to be his last.

Alexander MacLeay, F.R.S. (1767-1848), was a general entomologist and head of a family, several members of which, including himself, took an active part in the development of Australia. He became Colonial Secretary for New South Wales in 1825 and died in Sydney, where in 1836 he had helped to found the museum.

MacLeay was a very wealthy man who had built up a considerable private museum, which included the British collections of John Curtis, F.L.S. (1791-1862), now in Melbourne. He succeeded his friend Marsham as Secretary of the Linnean Society in 1798, and preserved among his papers repeated appeals for financial help, as did another friend, Bishop Goodenough of Carlisle, F.R.S., and a founder member of the Linnean Society, all of which they appear by context, to have ignored.

Perhaps Kirby had some knowledge of this when he wrote to MacLeay on 24th December, 1819: 'Our poor friend Marsham's departure from this troublesome world I learned from a friend who observed it in publick print and your son on my application was good enough to give me some particulars of his death.

'Sorrows came cumulatively upon him previous to his removal and I trust that they have worked out for him an entrance into a happier state than he has lately experienced below.'

Marsham's book, dedicated to the Linnaean Society, gave enormous impetus to the study of our native Coleoptera and inspired the publication in 1807 and 1809 of our first 'local' list—that of Norfolk. Its author, the Rev. John Burrell, A.M., F.L.S., F.E.S., sometime Rector of Letteringsett near Holt, was a keen entomologist and an admirer of Marsham. Living in Norfolk and out of touch with the metropolis, he was reluctant to write 'lest his labours prove superfluous' yet providentially the first part of his Catalogue of the Insects of Norfolk dealing with the Coleoptera was printed in the Transactions of the 1806 Entomological Society of London. 'Of the suitableness of such a subject to the designs of the Institution I entertain no doubt, it being certainly a grand desideratum to ascertain the products of each county in the kingdom . . .'

To clarify my reference to 1806 it is necessary to refer to the Aurelian Society founded by Adrian Hardy Haworth (1767-1833) on 1st June, 1801 and which existed until 1806, when remaining members became Fellows of its immediate successor, the Entomological Society of London (1806-1822).

The Foundation Deed of the Aurelian Society, in the handwriting of Haworth and bearing the signatures of the founders, remained in the possession of Richard Cuming of Walworth, the Secretary, was passed to his descendant Henry Syer Cuming (ob. 1902) and thence to the Walworth Central Library, where it is now preserved. Haworth was Life President; the Rev. John Burrell, 3 Skrimshires, Robert Scales, George Ingall, W. Jackson Hooker and the Rev. Charles Abbott, D.D., F.L.S. of Bedford, are among the signatories.

The 1806 Society published a volume of Transactions issued in three parts in 1807, 1809 and 1812 respectively. Burrell's paper occupies pp. 101-112 in Part 1 and 113-240 in Part 2, and lists in comprehensive form 807 species included in Marsham, plus 39 others then new to Britain, giving 846 in all. For purposes of comparison the number of species listed by James Edwards for the county in 1893 is 1,728.

The next notable local list is that of L. W. Dillwyn (1778-1855) who in 1829 printed for private circulation 'Memoranda relating to the Coleopterous Insects found in the neighbourhood of Swansea' (75 pp.). This is of particular interest as the author, a well known naturalist, was in close touch with T. Marsham, Dr. W. E. Leach, G. Samouelle, J. F. Stephens and other leading coleopterists.

William Elford Leach, F.R.S. (1790-1836), was a Devonian by birth and graduated M.D. at Edinburgh. He joined the staff of the British Museum, first as Assistant Librarian and was later engaged in the Department of Natural History under C. Koenig. Dr. Leach wrote papers on many aspects of Zoology, including mammalia, aves, crustacea, mollusca and insecta.

As an entomologist, his favourite order was the Coleoptera and his name will ever be remembered for the first British capture of *Carabus intricatus* L. in 1811 'under a stone in a wood opposite the Virtuous Lady Mine on the R. Tavy below Tavistock in Devonshire . . .'

Dr. Leach achieved great renown in several fields, but in 1821 he retired from the museum following a mental breakdown. Coleopterists will remember him for two papers on the genus *Meloë* in *Tr. Linn. Soc.* for 1815 and papers in his *Zoological Miscellany*, a three volume work published from 1814 to 1818. W. E. Leach spent his last years in Italy and died of cholera during the epidemic of 1836, a disease to which A. H. Haworth had already fallen a victim in Chelsea in 1833. Dr. Leach was a first class field naturalist and had been a source of inspiration to his museum colleague George Samouelle (17??-1846), who entered the service of the Trustees about 1821 after having been a bookseller.

With full acknowledgement, Samouelle embodied much of the work of Leach in his 'Entomologist's Useful Compendium' of 1819, including names and descriptions of such insects as *Cillenus lateralis*, *Demetrias monostigma* and *Aëpus*, which in consequence now are credited to the former.

This book is a fascinating link with the early days of our science and contains valuable detail and sound advice. 'There is a vile practice in use among collectors, to mend (broken) specimens by parts from other insects. I cannot sufficiently express my abhorrence of such ways . . .' 'No exotic specimen should ever be placed in a collection of British insects, however near it may approach in appearance . . .' 'Every entomologist should keep an exact journal of the insects he collects; with an account as far as possible, of the place, food, times of appearance, etc., and place to each insect a number corresponding with that of his journal . . .' (p. 322).

In 1833-34 Samouelle published 'The Entomological Cabinet' in two volumes and by permission dedicated this work to Princess (later Queen) Victoria. He contemplated a larger work for which support was not apparently forthcoming. The 'Cabinet' contains a reference to the death of elm trees in St. James's and Hyde Parks and in Camberwell Grove. The cause was attributed to damage by *Scolytus*, and at Camberwell, to the escape of gas from badly laid pipes followed by *Scolytus* attack and the action recommended was to fell and burn.

Samouelle seems in his later years to have fallen out of favour with the Trustees and left the museum ca. 1841.

A surprising work which appeared in 1825 was the 'Monograph of the Pselaphidae and Scydmaenidae' by Henry Denny (1803-71) sometime curator of the Leeds Literary and Philosophical Society. These very small insects are beautifully depicted in colour enlargement, and to quote Samouelle (1834): 'The work, as a specimen of typography (sic), does great credit to the press of Norwich and is a fair specimen of the chaste taste of our much-respected friend Mr. S. Wilkin'. (Simon W., F.L.S., 1790-1862—a well known coleopterist of the period.)

The Rev. William Kirby, F.R.S., that revered entomologist, was the great link between the old and new philosophies at this time.

Born in 1759, he lived until 1850 and the service he rendered to entomology in Britain cannot be overpraised.

He is best known for the famous 'Introduction to Entomology' written in collaboration with William Spence, but as a coleopterist he contributed a major paper on the genus *Apion* in 1808 and a supplement in 1811 in which 68 species are listed as occurring in Britain, of which 31 were new to science. Our list now stands at 85 species. Kirby assisted J. F. Stephens materially in respect of the Staphylinidae, a notoriously difficult group of more than 900 species and left an unpublished ms. in three volumes on this major family which is now in the British Museum (Nat. Hist.).

Kirby's first published work was the well known 'Monographia Apum Angliae' (Ipswich, 1802) dedicated to Thomas Marsham. On this undertaking Kirby lost several hundred pounds, owing entirely to the limited market for letterpress books on entomology at this period.

James Francis Stephens was born in 1792 and died in 1852. His great work was the 'Illustrations of British Entomology' published in 12 volumes between 1828 and 1846. This was supplemented by the 'Systematic Catalogue of British Insects', 1829, the 'Manual of British Beetles', 1839 and by many papers. Stephens is a man for whom one may develop real affection and feel genuine sympathy with his misfortunes.

He was involved in copyright litigation with Professor James Rennie in 1832 for alleged piracy from his 'Illustrations' at a time when the courts evidently thought little of the activities of writers on natural history and he sustained serious losses which were to some extent offset by amounts publicly subscribed by friends. The sympathy of many entomologists was with Stephens and when, in July 1833, John Curtis attacked him in a note appended to plate 461 of his 'British Entomology' then appearing in serial form, that powerful advocate Edward Newman rose to the defence. 'We never recollect addressing ourselves to a task which we so heartily wished to avoid, as that on which we are now about to enter; nothing but the call of imperative duty could induce us to undertake it. We have been angry, but we shall not commit ourselves; the first burst of indignation has passed away, and in sorrow, in deep sorrow, do we ascend the tribunal we are compelled to occupy, and judge between the offender and the offended . . . the cruel allusion to the affair with Rennie—an affair which we consider reflects anything but credit on the laws of this country, is the most unfeeling of all, and betrays a spirit of deep rooted animosity and revenge which lowers our opinion of our kind. We presumed that the circumstances under which Mr. Stephens was placed had rendered him an object of kindly feeling with all scientific men; we imagined that self-respect would have prevented a Briton from striking another in distress; we supposed that British honour would have revolted from such a deed; we have, in fact, been deceiving ourselves—we have been leaning on a reed' . . . 'We fear that Mr. Curtis will find he had better, far better have committed the whole copy of the tainted number to the flames, than have ventured to risk it on the excited wave of public opinion.' (*Ent. Mag.* (1833), 1: 451).

Stephens had entered the Admiralty Office in 1807 on the recommendation of his uncle Admiral Stephens and in 1818 his services to assist Dr. Leach were requested by the Trustees of the British Museum. He accepted secondment to what must have been a more congenial occupation, but when his allotted task at the museum was finished he returned to the Admiralty where he encountered the animosity of his superiors, a fact which led to his premature retirement and loss of a substantial part of his pension.

Stephens appears to have returned to the British Museum in an unpaid capacity and to have worked at Bloomsbury until his death. During this period he suffered bouts of ill health and an unsuccessful attempt was made by friends to secure for him a Civil List pension.

His collections were purchased by the British Museum and his library by Henry Tibbats Stainton, F.R.S. (1822-1892), at whose death it was presented to the Royal Entomological Society by his widow. Stephens probably did as much as any other individual to enhance the growing reputation of British entomology in the early 19th century.

He had many friends and many detractors. Unlike Kirby, Marsham, Denny and others, he declined to use a microscope regularly, apparently taking the view that what could not be seen through a pocket lens was of little practical use. One hates to contemplate what he would have thought about the methods and procedures of the entomologists of the present day! He did however react against the prevalent and obnoxious practice of impaling living insects on pins and introduced the use of the killing bottle with crushed laurel leaves (*Ent. Mag.* (1834), 2: 436).

In the field of Coleoptera, Stephens described many species new to science and increased Marsham's total of 1,307 species native to Britain in 1802 to 3,462 species by 1839. It is fair to say that some duplication had occurred and that the true figure was probably around 2,800.

Stephens's 'Manual', used with the G. R. Waterhouse 'Catalogue' of 1858 (published 1861) is of the greatest assistance in evaluating fauna lists and so forth, published prior to say, the year 1880.

The period from 1839 onwards saw the publication of many papers on the British Coleoptera scattered through a wide range of media. Some of the papers are extremely comprehensive and were, in fact, monographs of great merit, but nevertheless the lack of a complete fauna in English must have imposed severe restraints.

Although the 1858 list permitted the continued use of the 'Manual', with the drastic treatment of Stephensian names by Waterhouse, the pendulum had swung too far.

His interpretation of Stephens's nomenclature, based as it was upon the state of the Stephens collection in the 1850's, was challenged and an acrimonious correspondence conducted in the 'Entomologist's Weekly Intelligencer' developed between G. R. Waterhouse (1810-1888) and E. W. Janson (1822-1891). Both were capable entomologists and former collaborators.

The correspondence was closed by the Editor, H. T. Stainton in No. 121 (22nd January, 1859) in the following terms: 'Here the controversy must close, as we cannot afford space for the continuance of it. We have struck out all the strongest expressions in the letters of both combatants, as no good could arise from their publication.'

In 1874 Janson published for the Hon. Herbert Edward Cox the well known 'Handbook of Coleoptera' in two volumes. This excellent book was the first on the British fauna to employ the principle of the dichotomous key to species differentiation which appears to have originated on the continent with Redtenbach's 'Fauna Austriaca' of 1849.*

* A key on this principle is used by Andrew Murray in a paper on Genus *Catops* in *Proc. Roy. Phys. Soc. Edin.* (1856) 1: 73.

H. E. Cox lived in London for many years. He was elected a member of the Entomological Society in 1867 and retained his membership until his death in Jamaica in December, 1914. He was evidently a keen and capable coleopterist but his name is strangely absent from the entomological literature of the period.

Cox was domiciled in Jamaica from 1894 and his position in local government there earned him the courtesy prefix associated with his name. A large part of his collection was presented to the Hope Department, Oxford, in 1915 and the remainder to the library in 1922. His book was eclipsed by the more comprehensive work by the Rev. Canon W. W. Fowler, 'The British Coleoptera' in 5 volumes, 1887-1891, but its direct approach and simplicity were esteemed by many.

As with most of the earlier general works such as those of Donovan, Sowerby, J. Curtis and J. F. Stephens, the colour plate edition of Fowler was issued in part form and a copy in the British Museum (Nat. Hist.) Departmental Library has been bound with the original paper covers intact.

Fowler is still a great work of reference and has been augmented by a supplemental volume published in 1913 by Canon Fowler and Horace Donisthorpe. The work has been further extended by a volume of additions to the fauna by Donisthorpe in 1930.

I feel I cannot pass from this aspect of the subject without recording my personal acknowledgement of the stability and uniformity engendered by the combined work of W. W. Fowler, H. Donisthorpe and T. Hudson Beare, and the 1904 and 1930 catalogues supported by the Power collection of British Coleoptera at the British Museum and my appreciation of the facilities offered by the Trustees of the Museum to students generally, a privilege which should not be under-estimated.

COLLECTORS

In volume IV of Canon Fowler's 'British Coleoptera' occurs the intriguing reference to Lady Maryon-Wilson (Dame Jane): —

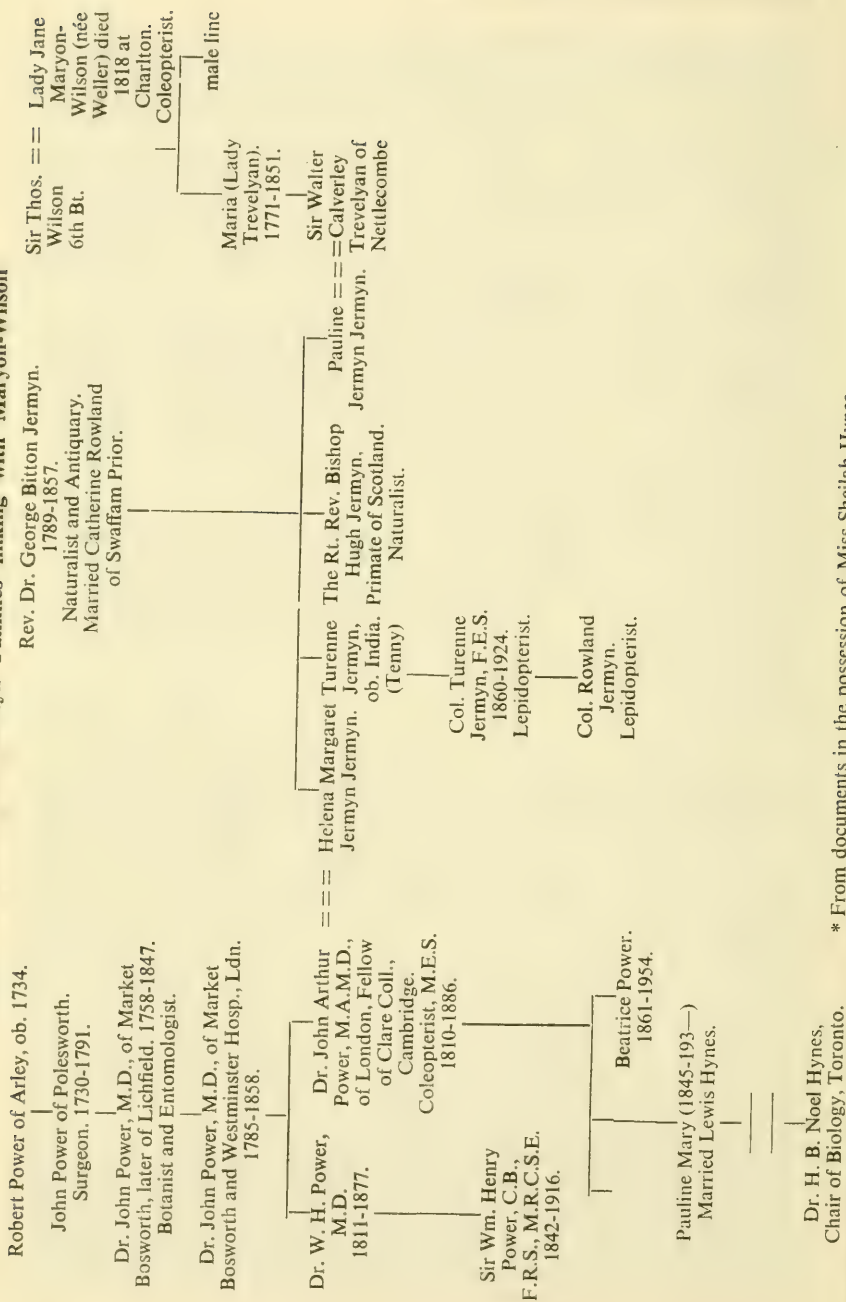
Odontaeus mobilicornis . . . 'Charlton (Lady Maryon-Wilson, one specimen in or about the year 1795). This specimen is in Dr. Power's collection; Lady Maryon-Wilson was one of our earliest working coleopterists and used to take many good species at the end of the last (18th) century, such as *Ludius ferrugineus*, *Crioceris merdigera* etc., of the last mentioned—I have two or three specimens taken by her in my collection.'

This poses the questions—who was the lady and how did the collection (or what remained of it) suddenly reappear in mid-Victorian times? An enquiry of our late Curator, Sydney Ashby, elicited a reply in the negative and the rider that he did not approve of lady entomologists anyway and felt they shouldn't be allowed!

I returned to the problem years later and with greater resolution. A little time spent with Debrett indicated two possible identities of which one was the more likely, as indeed it proved to be.

Dame Jane Wilson (née Weller, 1749-1818) was the wife of Sir Thomas Spencer Wilson, Bart. of Eastbourne. Charlton, Hampstead and other manors had been possessed by the Rev. John Maryon (ob. 1760), Rector of White Roding in Essex, and on his death passed to his niece, Margaret Maria, wife of John Badger-Weller and thence to her daughter Jane. It appears that the Wilson family adopted the name Maryon-Wilson sometime after the inheritance of Charlton.

Pedigree of Power* and Jermyn Families linking with Maryon-Wilson



Dr. H. B. Noel Hynes,
Chair of Biology, Toronto.

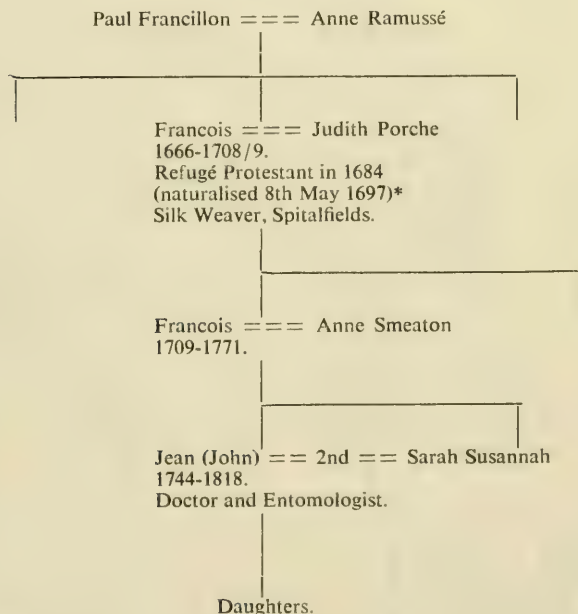
* From documents in the possession of Miss Sheila Hynes.

A daughter of Dame Jane, Maria (1771-1851) married Sir John Trevelyan (5th Bart.) and their son, later Sir Walter (6th Bart.), married Pauline Jermyn, sister of Mrs. J. A. Power. Dame Jane the coleopterist amassed a valuable museum which passed to Maria, Lady Trevelyan and is at their former home at Wallington, Northumberland (now in the care of the National Trust). Perhaps Dr. Power persuaded her that the beetle collection needed regular attention and was better in his hands?

Contemporary with Dame Jane Maryon-Wilson was John Francillon, 1744-1818, whose descent from a Huguenot refugee from the South of France is shown on the pedigree exhibited. We know that Francillon lived in London and practised as a physician. He was three times married and left daughters but no male descendant. A brother of John Francillon became a lawyer and his descendants still practise in this profession.

Charles Lyell, the botanist (1767-1849) tells us that he 'saw the whole of Francillon's collection of British and foreign insects, the finest in the world'. The collection was sold in June 1818, occupying nine days and realised £725, and is said have been the earliest recorded exclusive sale of insects. British Coleoptera were purchased by Dr. Leach for the British Museum and by J. F. Stephens, the Rev. W. Kirby and the Rev. F. W. Hope.

Pedigree of the Francillon Family†



* Per Agnew, 1874.

† Compiled with the assistance of Jn. F. Francillon Esq.

Pedigree of the Waterhouse — Griesbach — Rye Families

Johann Heinrich Griesbach

of Halle.

Married sister of Sir W. Herschel.

Justus Heinrich G.
'Cellist, Q.
Charlotte's Band,
Windsor.

John Henry G.
1798-1875.
'Cellist & composer.
Windsor.

Coleopterist.

Geo. Leopold Jacob G.
Music Teacher.
Windsor.

Rev. Alex. W. G.
MES.
Coleopterist.

Geo. A. G.
MES.
Coleopterist.

W. G.
Coleopterist.

Henry G.
MES.
Coleopterist.

Eliz. Ann. G.
Coleopterist.

James Edward Waterhouse.
Solicitor's Clerk.
Entomologist.

Geo. Robert W.
1810-1888.
Keeper of
Minerals, B.M.
Pres. MES.
Coleopterist.

Fred. Geo. W.
1814-1898.
Coleopterist.
Co-founder
Adelaide Mus.

Chas. Owen W.
1843-1917. FES.
Coleopterist.
i/c B.M. Colln.

Fredk. Herschel W.
1845-1919.
Librarian to Zool.
Soc. Coleopterist.

Edw. Alexander W.
1849-1916.
Dept. Entomology,
B.M.

Miss Waterhouse

Edward Caldwell Rye
1832-1885.
MES.
Coleopterist.

Bertram Rye.
1872-1939.
FES.
Coleopterist.

Gustavus John W.
Pacific
Ethnologist.

Dr. Gustavus
Atholl W.
1877-1950. FRES.
Australian
Lepidopterist.

Another interesting group of coleopterists at this period were five members of the Griesbach family of Windsor, three of whom became members of the Entomological Society.

Stephens publicised a number of their records from the Windsor area and it is well known that up to 1930 some of their captures had never been repeated. They were a musical family who came to England from Halle in Hanover to join Queen Charlotte's band and also played as a family chamber orchestra. In my earlier days some members of our Society were convinced that they had 'fiddled' the records, but the Griesbach honour was abundantly redeemed when *Adelocera querceus* (Herbst), a handsome click beetle, was rediscovered at Windsor and restored to the British list in 1936.

Elizabeth Griesbach became the wife of George Robert Waterhouse and the joint pedigree linking also with E. C. Rye is given. The Rev. Andrew Griesbach is said to have been the first systematic collector of beetles in Cambridgeshire and worked the Fens extensively.

The story now switches to the Rev. Dr. George Bitton Jermyn (1789-1857), sometime Curate of Swaffham Prior, Cambs., antiquary and naturalist. His large family of children formed the nucleus of the short-lived Swaffham Prior Natural History Society, of which Dr. J. A. Power, the celebrated coleopterist, became Patron.

The Society was founded in 1834 and existed until 1838. It attracted considerable interest in Cambridge academic circles, as the following passage taken from the biography of Bishop Hugh Willoughby Jermyn, written by his son Edmund, will show:

'Besides the family, there were many Cambridge friends who came to the meetings, read papers, joined in expeditions in the fens, and contributed specimens. Among these were Professors W. Whewell, C. Babington, A. Sedgwick and Henslow, also Dr. J. A. Power (Fellow of Clare) who married my Aunt Helena; the Rev. W. E. Scudamore, whose sister Ellen my father married, and several Westminster friends, including a few Phillimores. The Minute Book of the Society, with the Papers read at the meetings, and the Roll of Members, I have lately given to Mr. C. P. Allix of Swaffham Prior House, who himself has a good geological and archeological collection and who has always been one of my Father's greatest friends. My Father retained his enthusiasm for natural history to the end of his life. . . .'

'In 1838 G. B. Jermyn moved to Long Stanton House and the "Swaffham Prior Natural History Society" came to an end. When, a year or two later, the Long Stanton establishment also was broken up, the Society's collection was sold in general auction. A good deal of it was bought by Dr. J. A. Power, and this portion now belongs to his youngest daughter, Miss Beatrice Power, of 81 Ashburnham Road, Bedford. One box of butterflies (which included a Great Copper and several "Machaons" from the fens) was given to me by Dr. Power, and possibly my brother Willoughby may have it now.'

Names of other entomologists on the Roll of Members or Visitors are Rev. Leonard Jenyns (later changed to Blomfield), J. O. Westwood, John Curtis, J. F. Stephens, Rev. W. Kirby and Rev. L. P. Garnons.

May I now read an excerpt from the Minute Book of the Society:

'June 18th, 1836. Mr. J. A. Power, Mr. Broome, papa, Hugh, Tenny and me (R. F. Jermyn, Secretary, aet 9) went to the Reach Chalk Pits and though we were there as soon as 9 o'clock a.m., almost all the petals of the Glaucium were fallen off. Then we went into a beer-shop and took two

gallons of beer into Burwell Fen in a boat with Jem Retchy to punt us along and papa fell into a ditch up to his neck, and Tenny fell out of the boat into the water, and Hugh also fell into a ditch, but not in consequence of the beer, by no means. The worthy patron, Mr. Power, also got bogged which was great fun.'

'... We saw a great many Machaons and only caught two or three of the best ...'

As will be seen from the appended pedigree of the Power family, John Arthur, M.D. (1810-1886) was the fourth medic in direct descent from the surgeon John Power of Polesworth, Warwickshire. After leaving Cambridge as a qualified doctor (he had trained at Addenbrooks) he was appointed to the teaching staff of Westminster Hospital. Together with his brother, Dr. W. H. Power, he enjoyed success as lecturer and examiner for the Indian Civil Service and the Army Medical Department.

His interest in entomology was aroused by his grandfather, whom, in childhood, he had accompanied on field excursions. It was fostered by contact with kindred spirits whilst at Cambridge, where after graduating, he became a Fellow of Clare College.

His professional duties allowed him considerable leisure to pursue his entomological activities and he built up splendid collections of both Coleoptera and Hemiptera. Under the influence of T. V. Wollaston (1822-1878) who pioneered the system in England, Power carded all but the largest species of insects and left to posterity material which has served generations of coleopterists privileged to refer to it.

For museum use the collection was remounted and rearranged for the Trustees in accordance with Fowler's 'British Coleoptera' by Bertram Rye (1872-1939), son of E. C. Rye, and Edward A. Waterhouse (1849-1916), youngest son of G. R. Waterhouse. Both were sons of well known writers on Coleoptera.

During his residence in Bedford the writer became acquainted with Miss Beatrice Power (1861-1954), the youngest and last surviving child of Dr. J. A. Power, and from her heard many interesting details of the Power family and their friends, among whom in earlier years had been J. F. Stephens and the Rev. W. Kirby. He had collected with the former at Holme Fen about 1833 and between them they took 37 *Lycaena dispar* Haw. (teste J. M. Power in Beds. Times obituary). Dr. Power published a number of articles on the Coleoptera and possessed a knowledge of our native fauna which was unrivalled in his day. It was however upon his field work that his fabulous reputation was based, giving rise to the two well known cartoons of E. C. Rye, his friend and contemporary. The caption on one drawing: 'Anthaxia spokesman — Don't dig doctor, we'll come down' expressed the views of his friends.

A particular instance of his prowess followed upon the receipt of a report in London to the effect that Henry Moncreaff had found the extremely rare *Drypta dentata* (Rossi) near Portsmouth. Power's friends suggested that this was indeed a challenge, which he in fact accepted. The following weekend Power took a series of the insect at Alverstoke, which later proved to be Moncreaff's locality. Moncreaff's copy of the rare Catalogue of British Insects by Rev. J. O. Morris, 1865, with notes of the locality for *Drypta*, is exhibited. Dr. Power quite often (Miss Beatrice Power said always!) collected in his tail coat and top hat, in which latter he carried a collecting bottle and chip boxes, contained in a small bag. This bag on at least one occasion known to the family dropped out as he raised his hat to a lady acquaintance, to the consternation of both!

Power was among the first to break away from the old 'series of four' tradition and in fact had the faculty of setting his smaller insects in long single and sometimes double straight rows on card. In many instances his series ran to 50 or 60!

Mrs. Power had as a child formed a small collection of fenland butterflies, some of which she had mounted as transparencies on thin gummed paper. I was shown this in 1947 and saw *machaons* and *dispars* among them, but (for the record) no *podalirius*.

J. A. Power (1810-1886) suffered a stroke in 1881, which compelled him to retire. The family moved to Bedford, where Dr. Power died in 1886. Meanwhile, about 1879 Canon Fowler, then a schoolmaster at Repton and from 1880 headmaster at Lincoln, developed a purposeful interest in Coleoptera. Realising perhaps that time was not on his side, he established a close contact with the Powers and was thus able to draw extensively upon the Doctor's knowledge of our fauna. For a period Fowler had apartments in the house next door to the Powers' as a pied à terre for use on his many trips from Lincoln, and this house, No. 83 Ashburnham Road, Bedford, was the wartime H.Q. of the 5th Beds. Bn. of the Home Guard. 'And who,' asked Miss Power of me on one occasion, 'was the young clergyman we always had in the house? My mother said she thought that he did most of his collecting in my father's cabinets.'

I was able to tell her, and to say how much future generations of coleopterists owed to their close association.

I have referred to Edward Caldwell Rye (1832-1885), whose tragic death from smallpox deprived the 'Entomologist's Monthly Magazine' of one of its foundation Editors and our science of a most active and capable exponent. Rye was the author of more than 240 papers on British Coleoptera, some of which are very extensive. His first publication in Volume I of the 'E.M.M.' (1864) was a revision paper on the staphylinid genus *Stenus* which amounted to 36 pp. This is a group of more than 60 species, the separation of which gave rise to considerable difficulty and it was not until recent times, when the genitalia were critically examined, that reliable separation of some species could be achieved.

E. C. Rye mastered these and other difficult groups and *Stenus oscillator* Rye, illustrates the point. Described in 1870 from a single specimen in Coll. Power, it was by some regarded as a possible hybrid and was not accepted as a valid species by that well known specialist, Dr. N. Joy (1932). About 80 years elapsed before examination of the male genitalia justified Rye's prognosis.

For a number of years E. C. Rye contributed a survey of additions to the British list and corrections to nomenclature in the 'Entomologists' Annual' which continued until that excellent periodical ceased publication in 1874.

Many newcomers to the study of the Coleoptera have made use of Rye's 'British Beetles' (1866) revised by Fowler (1890). This excellent little work with its coloured plates and (in Ed. I) Rye's catalogue, constituted a most useful handbook for the beginner. It was dedicated to Newman, an entomologist of great stature.

The work of Rye can only be approached by that of Dr. David Sharp (1840-1922) which was spread over many more years. It will be recalled that Sharp a few years after qualifying as a doctor accepted the post of medical 'guardian' of a wealthy mental patient, after whose death Sharp was able largely to devote himself to entomological pursuits.

Inevitably a number of stories concerning Dr. Sharp are current, but perhaps the most amusing is that recounted by Prof. Frank Balfour Browne (1950) re *Agabus striolatus* (Gyll.), an insect which has only been taken (in numbers) in 1839 and 1840 and not on any occasion since, although earlier records of single specimens are known. Ten or twelve dried specimens had been sent to Sharp . . . 'He had received the specimens and had relaxed them in a tumbler of water standing on his table, at which he was sitting mounting them, while his "guest" wandered about the room. Having mounted the third specimen, he looked up to see his "guest" finishing the last drop of water in the tumbler, including the specimens! He told me that he seriously thought of giving an emetic to the new possessor of the valued insects, but resisted the temptation.' Dr. Sharp lived at Brockenhurst for a number of years and was well known to members of this Society.

The Rev. Andrew Matthews was a prominent writer on the British and foreign Coleoptera and an indefatigable worker on the most minute of the fauna—the Trichopterygidae, the length of the majority of which ranges from $\frac{1}{2}$ to 1 mm. He was a skilful artist (as was E. C. Rye) and his 'Trichopterygia Illustrata et Descripta' (1872) was widely acclaimed.

There were four coleopterists in the family and two have been confused in Horn & Schenkling (1929). The Rev. Andrew Hughes Matthews (ob. 1845?) was the father of the Rev. Andrew (1815-1897), the Rev. Henry (ob. 1874) and Mr. J. B. Matthews of Vancouver.

In the staphylinid genus *Myllaena* (*Centroglossa*) we encounter a situation which may be unique. Three species new to science (*brevicornis*, *elongata* and *gracilis*) described in 1838 by A.H.M. are joined by two others (*fowleri* and *masoni*) described by his son A.M. in 1883.

I have drawn attention to the losses on publications sustained by Marsham and Kirby. They were by no means alone. J. F. Stephens and J. Curtis lost money also, notwithstanding that financial support was given to the last-mentioned by the Dale family of Glanvilles Wootton. The need for an entomological periodical was severely felt but the limited market deterred publishers generally.

Several learned societies at differing periods published their proceedings but naturally tended to be concerned with their own membership.

In 1828 Volume I of the 'Magazine of Natural History' was published by Longmans under the Editorship of J. C. Loudon. This journal became 'Annals and Mag. of N. Hist.' in due course and over the years has included a number of papers of interest to coleopterists.

The first of the periodicals restricted to entomology however was the quarterly 'Entomological Magazine' which was started by Edward Newman (1801-1876) and ran under his Editorship from 1833-1838 (5 volumes). At this period he was in business as a ropemaker at Deptford and he appears to have used the firm of F. Westley as his publishers, the printing being carried out, probably at his own expense, by R. Clay (Volumes IV and V are printed by Clay 'for the proprietors'.)

According to the 'E.M.M.' (1876-77.xiii.45) the Editors failed in their endeavours to negotiate a publication agreement with the newly formed Entomological Society, which intended to publish its own journal. There was clearly a shortage of copy and the Ent. Mag. ceased publication.

Newman in the 'Grammar of Entomology' 1835, p. 303, is more positive: 'The Entomological Society, by November 1834 . . . included among its members most of the publishing entomologists of the present day. Unhappily, however, dissension has arisen on the propriety of the expending of the

funds of the Society in publishing Transactions. The advocates for publication being in power, the measure was carried against those of a contrary opinion, greatly to the dissatisfaction of some of the members.'

'On the 1st of November, 1834, a first part of the Transactions was accordingly published. And now another trouble arose: those entrusted with the publication had introduced . . . an uncourteous review of the Entomological Magazine—a work which from the first, had zealously supported the Society. This has alienated the friends of the Ent. Mag. and not them only, but many others, who insist that it is an unworthy act of a Society to descend to such a course.'

At this period Newman was in the hands of both printers and a publisher (for distribution) and thus he incurred costs over which he had no direct control.

In 1840 he became a partner in the printing business run by George Luxford (1807-1854), a botanist sufficiently well known to achieve notice in the 'D.N.B.'. A little later on Newman became the sole proprietor of the firm, but meanwhile it is not surprising to find that in November, 1840 he printed the first of the monthly numbers of 'The Entomologist'. This publication, like its predecessor, did not pay and ceased with the issue of December, 1842, deemed to complete Volume I.

Almost immediately Newman commenced to print and publish a new journal 'The Zoologist', the first volume of which (1843) was aimed at a wider readership, and this proved to be successful. The consecutive pagination of the entire series is of considerable advantage and the single year date avoids double searching occasioned by references to some periodicals carrying twin dates. 'The Zoologist' became the principal forum for coleopterists until the appearance of the 'E.M.M.' in 1864.

This new journal was started (and continued) as a non-profit making venture and gradually has become particularly associated with the Coleoptera and the orders other than Lepidoptera. The first Editor for Coleoptera was E. C. Rye and upon his death in 1885 Canon Fowler was appointed and continued in office for the ensuing 38 years.

Although not a coleopterist, mention should again be made of H. T. Stainton, who helped to found the 'E.M.M.' and was an editor for 28 years. Stainton also started the 'Entomologist's Annual', which ran from 1855 to 1874 (20 volumes). This publication, although slight by some standards, has been of great value to those interested in the British Coleoptera, containing as it does extensive papers by E. W. Janson and E. C. Rye.

Newman did not view these activities with equanimity, and although accepting the 'Annual' was not prepared to ignore the 'E.M.M.'. Accordingly, in 1864 'The Entomologist' was resuscitated and continued regularly thereafter, until, alas, it ceased in 1973.

Edward Newman was a remarkable man—a fine all-round entomologist and a capable coleopterist. His 'Letters from Rusticus' are classic and his entomological poems were popular in their day. ('The Insect Hunters' is dedicated to J. A. Power.)

Newman and his friends successfully campaigned against the iniquitous enclosure of Epping Forest and opened a fund for the relief of those whom he regarded as harshly treated by the enforcement of the Enclosures Act.

PROFESSIONALS

A feature of 19th century collecting was the employment of professional collectors, among whom Charles Turner (1808-1868), commemorated by

the beetle *Zeugophora turneri* Power, was the best known to coleopterists. 'The Entomologist' (1868-69.IV.107) described him as a collector of tact, intelligence, persevering and successful, possessed of a most accurate eye. 'When once shown a rarity would impress it on his memory taking only rough notes (intelligible to himself only) which seemed to guide him aright.' His work added 12 insects to the British list, including the phytophagous beetle *Zeugophora turneri* described by Dr. Power in 1863, and the rediscovery of 35 others known only by single specimens or by being mentioned by early authors as British.

Turner made journeys to Scotland and distant places in England and Wales on behalf of Dr. Power and others. The 'E.M.M.' (1868-69.V.25) states that he existed as a gatherer of moss for bird stuffers and 'when engaged in this pursuit was induced by the late James Foxcroft to collect insects and latterly his attention was principally directed to wood boring beetles, in the collection of which he attained great proficiency . . . ' 'Turner died, as he had always lived, in great poverty.'

The practice of employing professionals had its shortcomings! 'Beetles' (C.C.) Babbington in his undergraduate days in a letter of April 1829 (Coleoptera of Wicken Fen) wrote: 'I have caught Mr. Harbour letting --- have the first pick of the beetles; accordingly we have made our final adieus, my part in the affecting scene consisted in telling him he was a d --- d rascal, and signifying that I should kick him downstairs if ever he appeared in my rooms again. It seemed altogether mightily to surprise the young gentleman.'

And in gentler terms, from the Rev. James Sutton to Kirby in 1805: 'Oh! Mr. Kirby, I have found such a friend in a jobbing gardener near my house, as few people have been fortunate enough to encounter. Alas! like all terrespial possessions, he is fleeting and transitory; every assizes—nay, even every quarter sessions—may deprive me of him for ever. My friend is a capital collector of insects; but according to Fielding's idea of Jonathan Wild, he knows not how to make a distinction betwixt *meum* and *tuum*, though he has a miraculous facility of converting both into *suum*: I do really tremble for him, now that His Majesty has been graciously pleased to appoint High Sheriffs for the different counties.'

And as no doubt you would wish to reflect on the possible fate of the gardener, I will make my own adieu.

APPENDIX I

CATALOGUES OF OR INCLUDING THE BRITISH COLEOPTERA TO 1950

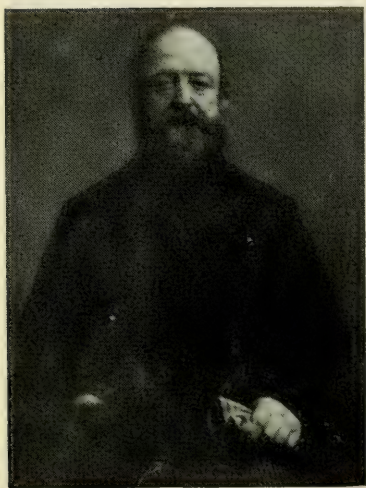
- | | | | |
|----|------|----------------|---|
| 1. | 1813 | S. Wilkin | 'Cat. of Brit. Insects' (unfinished but some parts printed — teste Curtis). |
| 2. | 1819 | G. Samouelle | 'A Nomenclature of British Entomology.' |
| 3. | 1829 | J. Curtis | 'A Guide to the Arrangement of Brit. Insects.' |
| 4. | 1829 | J. F. Stephens | 'A Systematic Cat. of Brit. Insects.' |
| 5. | 1829 | J. F. Stephens | 'The Nomenclature of Brit. Insects.' (This is an abridgement of Item 4.) |
| 6. | 1833 | J. F. Stephens | 2nd Ed. of Item 5. |
| 7. | 1837 | J. Curtis | 2nd Ed. of Item 3. |



Dr. J. A. Power, crayon, ca. 1842.
(From Miss S. Hynes)



Helena Margaret Jermyn-Power, crayon,
ca. 1843.
(From Miss S. Hynes)



J. F. Stephens.
(From a daguerreotype)



Dame Jane née Weller, Lady Maryon-
Wilson. Photograph of oil painting by
Trossanelli.
(From Mr. Raleigh Trevelyan)



Dr. J. A. Power.



Helena Power née Jermyn.



Photograph of E. C. Rye cartoon of Dr. Power. Collecting Cicones — 'And Aaron's rod swallowed up the other rods.'



Photograph of E. C. Rye cartoon of Dr. Power. Scene — the New Forest — Anthaxia spokesman: 'Oh, if that's you Doctor you need not dig, we'll come down.'



E. C. Rye.



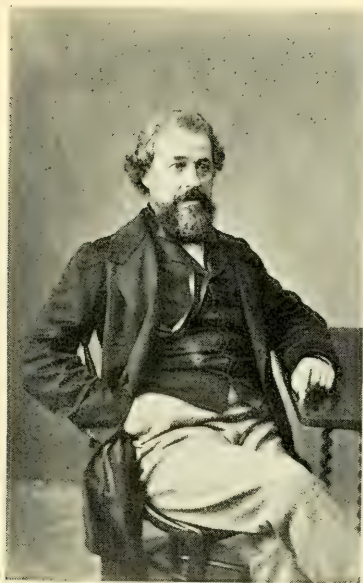
G. R. Waterhouse, ca. 1880.



Rev. Andrew Matthews.



C. O. Waterhouse.



Edward Newman, 1863.



Canon W. W. Fowler, ca. 1880.



E. W. Janson.



Charles Turner.

- | | | | |
|-----|-------------|------------------|--|
| 8. | 1855 | E. W. Janson | New Brit. Coleoptera since 1839 (in Ent. Annual 1.84).
N.B. 1839 was the date of publication of Stephens' Manual of Brit. Beetles. |
| 9. | 1856 | John Walton | 'List of Brit. Curculionidae with Synonyma' (Brit. Museum pubn.). |
| 10. | 1858 | G. R. Waterhouse | 'Cat. of Brit. Coleoptera.'
N.B. My copy of 4 + 117 pp. is dated 1858 on title, 1861 on Introduction and 1861 on cover. E. W. Janson in Ent. Annual 1859.3.118 implies that the catalogue was issued in parts commencing in 1858. Janson's criticism was extremely adverse. |
| 11. | 1861 | G. R. Waterhouse | 'New Edition' of Item 10 of 109 pp. This is quoted on the authority of Horn & Schenkling 1928. Two copies in R. Ent. Soc. Library are both Item 10 without the 8 pp. of index. |
| 12. | 1861 | G. R. Waterhouse | 'Pocket Cat. of Brit. Col.' |
| 13. | 1863 | G. R. Crotch | 'A Cat. of Brit. Col.' |
| 14. | 1865 | F. O. Morris | 'A Cat. of Brit. Insects.' This elusive document is referred to in some detail in Kloet & Hincks 1945 (Item 30 below) p. xv. My copy (ex libris H. Moncreaff) conforms exactly with the B.M. copy, i.e. terminating with p. 56 but the complete catalogue in the preparation of which W. F. Kirby of the B.M. and others assisted comprised 125 pp. (teste 'A Memoir of F. O. Morris' London 1897.275). It was apparently sold by Longmans, but why so rare? |
| 15. | 1866 | E. C. Rye | 'Cat. of the Brit. Col.' (in 'British Beetles' Ed. 1). |
| 16. | N.D. (1866) | G. R. Crotch | 2nd Ed. of Item 13 (numbered to 3062 sp. plus 30 = 3092). |
| 17. | 1871 | D. Sharp | 'Cat. of Brit. Col.' (numbered to 3186 sp.). |
| 18. | 1872 | E. C. Rye | 'A List of the Species of Col. recorded as new to Britain in the Ent. Annuals . . . (covering the period) . . . 1840-1871' (Ent. Ann. 1872.9.125). |
| 19. | 1882 | F. P. Pascoe | 'The Student's List of Brit. Col.' |
| 20. | 1883 | W. W. Fowler | 'Notes on New Brit. Col. since 1871' (E.M.M. 1882-83.19.121). |

- | | | | |
|-----|-------------|--|---|
| 21. | 1883 | W. W. Fowler
and A. Matthews | 'Cat. of Brit. Col.' |
| 22. | 1883 | D. Sharp | 2nd Ed. of Item 17 (numbered to 3243 sp.). |
| 23. | 1893 | D. Sharp and
W. W. Fowler | 'Cat. of Brit. Col.' |
| 24. | N.D. (1893) | W. H. Bennett | 'A new Exchange List of Brit. Col.' In this privately printed list the species are conveniently arranged in alphabetical order under their respective genera. |
| 25. | 1904 | (Sir) T. Hudson
Beare and
H. Donisthorpe | 'Cat. of Brit. Col.' (numbered to 3265 sp.). |
| 26. | 1915 | E. A. Newbery
and W. E. Sharp | 'An Exchange List of Brit. Col.' |
| 27. | 1930 | Sir Thos. Hudson
Beare | 'A Cat. of the Recorded Coleoptera of the Brit. Isles' (numbered to 3566 sp.). |
| 28. | 1939 | H. E. Andrewes | 'Check List of the Brit. Carabidae' in Generic Names of Brit. Insects (R. Ent. Soc. Part 6). |
| 29. | 1940 | Prof. W. A. F.
Balfour-Browne | 'Check List of the Brit. Hydradephaga.' Loc. cit. Part 7. |
| 30. | 1945 | G. S. Kloet and
W. D. Hincks | 'A Check List of Brit. Insects.' |
| 31. | 1949 | Rev. C. E. Tottenham | 'Check List of the Brit. Staphylinidae' in Generic Names of Brit. Insects (R. Ent. Soc. Part 9). |

APPENDIX II

SOME COLEOPTERIST MEMBERS OF THE 'SOUTH LONDON' AND 'BRIT. ENT. SOC.'

NAME		DISPOSAL OF COLLECTION
E. Newman	1801-1876	Entomological Club then to B.M. (N.H.).
E. C. Rye	1832-1885	Dr. Philip Mason, afterwards to Bolton Museum.
T. R. Billups	1841-1919	Sold to A. Ford (q.v.).
W. J. Ashdown	1855-1919	S.L.E. Soc.
W. West	1836-1920	S. R. Ashby, later to T. Barnett.
G. C. Champion	1851-1927	B.M.
W. E. Butler	1854-1924	Reading Museum.
S. A. Blenkarn	1883-1928	H. Willoughby Ellis.
G. J. Gahan (of B.M.)	ob. 1939	No Colln?
Comm. J. J. Walker, R.N.	1852-1939	Hope Dept., Oxford.
B. S. Williams	1841-1941	Liverpool Museum. Incorporates part of F. Bates Colln. (of Leics.).
Plant Path. Lab., Harpenden		
H. Willoughby Ellis	1869-1943	Owned Blatch & Blenkarn colls. Part to Harrow School, part sold.

A. Ford, Entom. Dealer	1871-1943	—
S. R. Ashby	1864-1944	C. MacKechnie-Jarvis.
E. C. Bedwell	1875-1945	Norwich Museum.
S. W. Kemp	ob. 1945	1st Colln. Dublin Museum.
		2nd Colln. Plymouth?
K. G. Blair (B.Mus.)	1882-1952	Red House Museum,
		Christchurch, Hants.
Dr. N. H. Joy	1875-1953	Selection to B.M., Cabinet
		Colln., S.L.E.S.
P. Harwood	1882-1957	Hope Dept., Oxford.
F. H. Grant	1870-1959	Bulk to Silwood Park
		Experimental Station.
F. H. Day	1875-1963	Carlisle Museum.
L. G. Cox	ob. 1965 (?)	L. Christie.
J. L. Henderson	1884-1965	S.L.E. Soc.
F. Coulson	1878-1965	A. E. Gardner.
Prof. W. A. F. Balfour-Browne	1874-1967	Royal Scottish Museum,
		Edinburgh.
Dr. A. M. Massee	1899-1967	Selection to B. Museum.
		Remainder to S.L.E. Soc.
W. O. Steel	1917-1969	Omalinae to B. Museum.
H. W. Forster	1908-1974	S.L.E. Soc.
F. Buck	ob. 1975	A. E. Gardner.
Rev. C. E. Tottenham		B. Museum.

APPENDIX III

GROWTH OF GENERA AND SPECIES OF BRITISH FAUNA

		GENERA	SPECIES
Ray	1710	7	237
Marsham	1802	47	1,307
Stephens	1839	679	3,462*
Crotch	1866	707	3,092
Cox	1874	710	3,193
Fowler	1887	708	3,243 approx.†
Kloet & Hincks	1945	947	3,690*

* Includes 'introduced' species.

† Excludes 'introduced' species.

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- Linnean Society
 T. Marsham
 C. Linnae
 Rev. John Burrell
 James Edwards
 L. W. Dillwyn
 British Museum (N.H.)
 W. E. Leach
 G. Samouelle
 H. Denny
 Rev. K. Kirby and
 W. Spence
 Rev. W. Kirby
 Rev. W. Kirby
 Rev. W. Kirby
 Rev. J. Freeman
 J. F. Stephens
 Prof. J. Rennie
 John Curtis
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CHANGE OF ADDRESS

Will members please note that all correspondence to the Editor should now be sent to him at: Department of Microbiology, Basingstoke District Hospital, Basingstoke, Hants.

PROCEEDINGS

11th September 1975

The President, Dr. M. G. MORRIS, in the chair.

EXHIBITS

Mr. E. S. BRADFORD — Larvae of *Blaps mucronata* Lat. (Col., Tenebrionidae) bred from adults taken in the cellar of a butcher's shop in Whitstable, Kent. The adults were found in some numbers during 1974.

Mr. A. E. STUBBS — Two species of craneflies (Dipt., Tipulidae).

(i) A female of an undescribed species of *Idiognophomyia* taken in Windsor Forest, Berks., 25.vi.1975. A male and a female were taken in the same locality, vii.1973. This genus, or perhaps subgenus of *Gnophomyia*, is known only from seven species; one from California, three from Africa, one from Malaya, one from Formosa and one from Japan.

(ii) a male of *Nephrotoma dorsalis* (F.) from Banteer, Co. Cork, 16.vii.1975. This distinctive large yellow and black cranefly, with deeply serrate antennae in the male, is a very scarce species in Britain. It was, therefore, surprising to find this a plentiful species in several riverside localities in Southern Eire this year.

Dr. R. J. DICKSON — (i) *Coleophora vibicella* (Hübner) (Lep., Coleophoridae) bred from cases on *Genista tinctoria* L., 29.vi.75, in the composite of woods between Swanwick and Knowle, Hants, sometimes known as Botley Wood. Mr. Barry Goater found the cases there in 1960. This year they were numerous, but confined to the foodplant at one end of one ride.

(ii) *Cynaeda dentalis* D. & S. (Lep., Pyralidae), new to Hampshire. A specimen at light, 6.viii.71 and two, 3.vii.1975. All come from *Echium* growing along the top of Portsdown Hill above Paulsgrove, an area under pressure from development as a recreation area.

Rev. D. J. L. AGASSIZ — A specimen of *Tinagma balteolellum* F. v R. (Lep., Douglassiidae) from the Kent coast, 5.vi.1975, new to Britain and a series of *T. ocnerosomella* Staint. for comparison. Also, jointly with Dr. J. LANGMAID, from Wicken Fen, 11.ix.75, two *Epinotia cinerea* Haw. (Lep., Tortricidae), new to the Fen, and three *Acleris cristana* D. & S. (Lep., Tortricidae).

COMMUNICATIONS

Mr. S. A. Knill-Jones remembered having exhibited a live sample of *C. dentalis* from the Isle of Wight.

There was a discussion on the abundance of ladybirds this year.

Mr. E. H. Wild reported *Epione paralellaria* D. & S. (Lep., Geometridae) from Aviemore; he thought this to be a new record. A friend's light trap had also produced *Hyles gallii* Rott. (Lep., Sphingidae) and he had taken the same species at home in Kent. He also commented that *C. dentalis* was common on the Purbeck Hills, Dorset.

Messrs. D. M. Appleton, R. J. Dickson and G. R. Else gave an illustrated account of 'Studies in the Ecology of Oxenbourne Down, a Hampshire Down'.

25th September 1975

The President, Dr. M. G. MORRIS, in the chair.

The President exhorted members to facilitate a more punctual start to

the meetings and brought the lecture forward before the Society's routine business.

Mr. P. C. Barnard was declared elected a member.

Mrs. Heather Angel gave a talk entitled 'Photographing Nature in Close-up'. Her discussion of techniques was illustrated by a memorable display of transparencies taken of subjects from marine biology to insects and plants in localities from the New Forest to Kashmir and the Galapagos Islands. The lecture was followed by earnest technical discussion with members.

EXHIBITS

Col. A. M. EMMET — Four specimens of *Ectoedemia atrifrontella* Staint. (Lep., Nepticulidae), captured at Ellenden Wood, near Whitstable, Kent, 11.viii.1975. The most recent British record for this species was in 1920, when Prof. E. G. R. Waters took two specimens at Tubney, Berks. One reason why records for *E. atrifrontella* are so sparse is that its life history is incorrectly given in the standard textbooks, which state that the larvae mine the bark of dyer's greenweed (*Genista tinctoria* L.); in reality it mines the tender bark of oak saplings.

Prof. J. A. OWEN — Seven species of beetles associated with birds' nests: *Quedius brevicornis* (Thom.), *Q. aetolicus* (Kraatz), *Philonthus subuliformis* (Grav.), *Carcinops pumilio* (Er.), *Dendrophilus punctatus* (Herbst), *Margarinotus merdarius* (Hoffman), *Gnathoncus buyssoni* (Auzat), from Oxshott, Surrey, vi-vii.1975. They were caught in false nests made from small polythene buckets with lids on and entry holes cut in their sides, suspended up to 15 ft from the ground in trees and baited with various contents.

ANNOUNCEMENT

Mr. J. Heath had attended the inauguration of the Austrian Entomological Society at Lunz-am-See, 5.ix.1975, and drew attention to that Society's proposal to make an annual Schiffermüller award to the author of the most noteworthy keys to European insects published during the preceding year.

COMMUNICATIONS

Dr. C. G. M. de Worms reported *Vanessa atalanta* L. and *Cynthia cardui* L. (Lep., Nymphalidae) on *Buddleia* in the New Forest, where he had also found Hummingbird Hawks. His antennae also reported captures of *Colias croceus* Geoff. (Lep., Pieridae) from S.W. Cornwall to Rhum and the Outer Hebrides, *Mythimna loreyi* Dup. (Lep., Noctuidae) from the Lizard and Co. Cork and most of the migrant hawkmoths, including *Hyles lineata livornica* Esp. and *Daphnis nerii* L.

Mr. A. E. Gardner reported two *Colias croceus* at Crow Point, Braunton Burrows, Devon, 19.ix.75 and *Vanessa atalanta* commonly on *Buddleia* at Watersmeet, Lynmouth, Devon, 17.ix.75. Mr. R. Dyke had taken *M. loreyi* at Salcombe, Devon, 3.ix.75.

9th October 1975

The President, Dr. M. G. MORRIS, in the chair.

The President reported the death of two members: Godfrey V. Owen of Pewsey, Wilts., who joined the Society in 1945 and Mrs. E. W. Graham

Campbell of Launceston, Cornwall, who joined in 1973. He also announced the death of Mrs. Mere, widow of the late member Robin Mere. She was a most generous benefactor to the Society.

The following new member was elected: Col. Douglas H. Stirling.

The President then welcomed a distinguished visitor, Prof. E. Munro from Canada.

EXHIBITS

The PRESIDENT — Specimens of *Apion lacertense* Tottenham (Col., Apionidae) all from Ireland and *A. carduorum* Kirby, males from Ireland and females from England. He showed rough drawings of the distinguishing male characteristics of each species. He discussed the five species of *Ceratapion* Schilsky at present included in the British list and suggested tentatively that the Irish *A. dentiostre* Gerst. must be referred to *A. lacertense* and in consequence there are only four species of *Apion* (*Ceratapion*) in Britain.

Mr. G. R. ELSE — Bees of the family Megachilidae removed from snail-shell nests: *Rhodanthidium siculum* (Spin.). Nest and adults from Tifnit, Southern Morocco. The nest was obtained 4.iv.74. The larva pupated the following year and the adult, probably hibernating, was removed in late September 1975. *Osmia caurulentia* (Panz.) male and female bred from a nest collected in Sandwich sandhills, East Kent, in July 1975.

Col. A. M. EMMET — Eight specimens of *Phyllocnistis xenia* Her. (Lep., Phyllanistidae), bred 12th-21st August from mines collected near Dover on 11.viii.1975. The foodplant is *Populus canescens* (Aiton) Smith. Specimens of *P. saligna* Zell. from Cambridgeshire and of *P. unipunctella* Steph. from Essex and Suffolk. The mines of all three species were also exhibited. He gave details of the occurrence of *P. xenia* in Britain and discussed the methods by which larvae of the group got rid of waste products, with particular reference to *P. unipunctella*.

COMMUNICATIONS

Mr. J. A. C. Greenwood reported seeing in South America a collection of larvae proceeding over the ground in a line, some walking on the others and all overlapping each other to some extent, thus not exhibiting the habits of a processional caterpillar. He wondered whether anyone had seen a similar phenomenon or knew anything about such a series. Mr. E. P. Wiltshire stated that, in Trinidad, larvae of *Papilio augaceides* occurred in masses in the early stages and wondered if Mr. Greenwood had seen larvae of a similar species moving to a fresh supply of food.

Mr. Bretherton gave a talk on 'Collecting Butterflies in Greece'. He pointed out that in general Greece had been poorly collected and that several new species had been added to the list in recent years. Collecting was difficult as one had to be on the ground at exactly the right time, and that owing to the very dry summers only mountain tops possessed reasonable fauna in the summer months. Roads still make travelling difficult in the more remote parts.

There was some discussion on Col. Emmet's exhibit, particularly as to the precise food plants of the various species since there seemed to be some doubt not only in the audience but in the literature as to the precise difference between *Populus canescens* and *Populus alba* L.

23rd October 1975

The President, Dr. M. G. MORRIS, in the chair.

EXHIBITS

Dr. B. J. MACNULTY — Specimens, male and female, of *Laphria flava* (L.) (Dipt., Asilidae) taken in Abernethy Forest, Inverness, 27.vii.1975. He gave details of their behaviour.

Mr. E. H. WILD — The tertrid *Carpocapsa saltitans* bred from seeds of the Mexican milkweed (*Sebastiana*), the Mexican jumping bean, together with capped seed burrows and pupa cases protruding. Two or three larvae may occupy a single seed and yet find sufficient food.

Mr. G. J. JAMES — A dwarf specimen of *Polyommatus icarus* Rott. (Lep., Lycaenidae), just under half normal size, caught in Dorset, 14.viii.75. A normal specimen was shown for comparison. Also a melanic *Galleria mellonella* L. (Lep., Pyralidae) from Evesham, Worcs., 18.viii.75.

Mrs. F. M. MURPHY — A female *Argiope bruennichi* Scop. (Arachnida), taken near Toulouse, France, by Jean Clark.

Mr. S. E. WHITBREAD — Firstly, two species of *Coleophora* (Lep., Coleophoridae) which have not been seen for many years. (i) A specimen of *Coleophora trigeminella* Fuchs bred from a case on apple from N.W. Kent, May 1975, together with bred specimens and cases of *C. badiipennella* Dup. and *C. alnifoliae* Barasch for comparison. (ii) *C. coracipennella* Hübn. A specimen bred from the same apple tree as *C. trigeminella* in May 1975. Bred specimens of *C. cerasivorella* Packard, *C. serratella* L. and *C. gryphipennella* Hübn. were shown for comparison. He described the cases of the two moths. The case of *coracipennella* appears to differ from the other species, but agrees with *trigeminella* in that the ventral keel runs into the lowest wing of the valve forming a Y shape; the other three species all have the dorsal keel running into the top most wing forming an inverted Y shape.

Secondly, the first Kentish specimens of *Coleophora salicorniae* Wocke, two from Higham in August 1974 and two from Stoke saltmarsh in August 1975, and lastly two mines of *Nepticula aceris* Frey (Lep., Nepticulidae) in the same leaf of Norway maple, taken with one other, at Chiddingstone, Kent, 17.x.75. Two mines were empty and one contained a dead larva. Neither moth nor larva had previously been found, only empty mines.

Mr. G. PRIOR — Larvae of *Eupithecia exigua* Hübn. (Lep., Geometridae) taken on hawthorn, near Royston, Herts., 28.ix.75. He pointed out how the cryptic colouration of the larvae provided perfect camouflage when the larva was in its normal feeding position.

The following new members were declared elected: Mr. R. L. Harvey, Mr. S. R. Miles, Mr. A. D. Creber, Mr. R. Wigglesworth, Mr. F. Riding, Mr. M. A. da Silva, Mr. G. B. Senior, Mr. W. B. Anscombe and Dr. G. Haig.

COMMUNICATIONS

Mr. R. F. Bretherton said Mr. A. Myers of Cork, S. Ireland, had informed him that he had taken 14 specimens of *Mythimna loreyi* Dup. (Lep., Noctuidae). Mr. E. S. Brodford reported seeing the Great Grey Shrike in Kent.

Mr. C. O. Hammond gave a talk, 'British Dragonflies', copiously illustrated with coloured slides. He showed how to distinguish between closely related species and discussed the present occurrence and populations of the various species in comparison with former years.

FIELD MEETINGS

CHOBHAM COMMON, SURREY — 13th April 1975

Leader: Mr. P. J. BAKER

Nine members attended this meeting on a warm day with sunny periods — especially in the afternoon. The main quarry were various spring larvae and after quite a strenuous sweeping session, most of the desired insects were found, though in rather small numbers. On heather were found *Lasiocampa quercus* L., *Dyscia fagaria* Thunb., *Perconia strigillaria* Hübn., *Dasychira fascelina* L., and *Xestia castanea* (Esp.), whilst *Pseudoterpna pruinata* Hufn. was found quite commonly on the common and dwarf gorse.

A fresh specimen of *Pachynemius hippocastanaria* Hübn. was flushed from the heather. In the sunny periods the butterflies *Gonepteryx rhamni* L. and *Polygonia c-album* L. were seen and in the afternoon quite a few *Archiearis parthenias* L. in flight proved to be the equal of even the most energetic younger members, though one sitting duck was literally picked off a dwarf birch.

Several specimens of the common lizard were found sunning themselves and the green tiger beetle (*Cicindela campestris* L.) was common, keeping just that one step ahead on the footpaths. One member trod on an adder, which fortunately decided that retreat was better than attack. Few ants were found and none of especial interest for the area.

WOKING, SURREY — 3rd May 1975

Leader: Dr. P. A. BOSWELL

The leader was joined by Prof. J. A. Owen at Woking Station on a warm day with broken sunshine. Collecting of beetles started in the Basingstoke Canal by the Old Woking Road bridge. The following species were taken: *Dytiscus marginalis* (L.), *Agabus sturmii* (Gyll.), *Hygrotus inaequalis* (F.), *Hydroporus palustris* (L.), *H. angustatus* (Sturm), *Hydrobius fuscipes* (L.), *Enochrus ochropterus* (Marsh.), *Noterus clavicornis* (Deg.), *Dryops* sp., *Anacaena limbata* (F.), *Laccobius alutaceus* (Thom.) and *Stenus fornicatus* (Steph.).

Nests of the wood ant *Formica rufa* (L.) on nearby Horsell Common were examined for myrmecophilous beetles, but only *Notothecta flavipes* (Grav.) was taken. Other beetles found in the area were: *Trixagus dermestoides* (Heer), *Elatér sanguinolentus* (Schr.), *Stenus aceris* (Steph.), *Metabletus foveatus* (Geoff.), *Bembidion migratorius* (Gyll.), *B. properans* (Steph.), *Simplocaria semistriata* (F.), *Agriotes obscurus* (L.) and *Cylindronotus laevioctostriatus* (Goeze).

An area of open woodland by the Hoe Stream at Old Woking was next visited. The following beetles were taken at the entrance to a nest of the ant *Lasius fuliginosus* (Lat.): *Habrocerus capillaricornis* (Grav.), *Zyras funesta* (Grav.), *Z. laticollis* (Maerk.), *Notothecta confusa* (Maerk.) and *Leptinus testaceus* (Mueller). Other beetles taken were *Xestobium rufovillosum* (Deg.), *Euophyrum confinis* (Brown) and *Cryptophagus* sp.

The final locality visited was Pyrford Common. The following beetles were taken with *L. fuliginosus*: *Amphotis marginata* (F.), *Z. laticollis*, *Drusilla canaliculata* (F.) and *N. confusa*. Nests of *Formica sanguinea* (Lat.) were also examined and *Dinarda dentata* (Grav.) and two specimens of the rare *Lomechusoides strumosa* (F.) were taken. A few workers of the slave species *Formica fusca* (L.) were found on this visit, unlike that reported

for a previous one. No other beetles were collected but the tiger beetle *Cicindela campestris* (L.) was common.

BEDFORD PURLIEUS, NORTHAMPTONSHIRE — 17/18th May 1975

Leaders: Dr. M. G. MORRIS and Mr. J. HEATH

Torrential rain on the Saturday washed out all hopes of running m.v. lights on the first evening of the meeting, although one hardy member optimistically met Mr. Heath during the day. No rain fell on Sunday, but the day was overcast and cold and the vegetation saturated with the previous day's rain. However, 12 members and friends gathered together on Sunday morning including, it was encouraging to note, two enthusiastic Lepidopterists still at school. Somewhat cheered by the song of the Nightingale and the sight of a particularly rich woodland ground flora, the party began an interesting, if not especially profitable, day. Bedford Purlieu is noted for its small-leaved limes (*Tilia cordata* Mill.) and these were both examined for Lepidoptera and earmarked for future visits, whilst under the guidance of Col. Emmet a particular search was made by the microlepidopterists for the larvae of Elachistidae.

Imagines of all four suborders of Lepidoptera were seen, the following species being recorded: *Micropterix thunbergella* F., *M. calthella* L., *Dyseriocrania subpurpurella* Haw., *Ectoedemia pulverosella* Staint., *Incurvaria masculella* D. & S., *Nematopogon swammerdamella* L., *Adela reamurella* L., *Esperia sulphurella* F., *Agonopterix arenella* D. & S. and *Aethalura punctulata* D. & S. No butterflies at all were seen. Larvae of Lepidoptera were rather more plentiful than the adult insects, but not many species were recorded. These included: *Eriocrania semipurpurella* Steph., *Anthophila fabriciana* L., *Coleophora gryphipennella* Hüb., *C. serratella* L., *Elachista regificella* Sircom, *E. humilis* Zell., *Agonopterix liturosa* Haw., *Lathronympha strigana* F., *Diloba caeruleocephala* L. and *Euproctis similis* Fuess. The identity of a larva which later proved to be *Campaea margaritata* L. provoked a lively discussion.

The only cynipid galls seen on Oak were of common species, *Biorhiza pallida* Oliv. (old galls), *Andricus kollari* Hartig and *A. fecundator* Hartig. Larvae of the heteropterous bug *Miris striatus* L. were not uncommon on various trees.

Coleoptera seen or collected included *Nebria brevicollis* F., *Phyllotreta nodicornis* Marsh. (on *Reseda luteola* L.), *Phyllobius pyri* L., *P. argentatus* L., *Polydrusus cervinus* L., *Sciaphilus asperatus* Bons., *Barypithes araneiformis* Schrank, *Barynotus moerens* F. (more than usually common at roots of *Mercurialis perennis* L.), *Curculio pyrrhoceras* Marsh., *Coeliodes dryados* Gmel., *Cidnophinus quadrimaculatus* L., *Cleopus pulchellus* Herbst, *Anoplus plantaris* Naev. and *Rhynchaenus rusci* Herbst.

MORFA HARLECH — 24/25th May 1975

Leader: Mr. P. N. CROW

Only one member attended, but the weather was good and the following insects were recorded:

Hymenoptera: *Crabro peltarius* (von Schreb.), *Bombus pratorum* (L.), *Bombus agrorum* (F.).

Diptera: *Tipula luna* (Westhoff), *T. variipennis* (Meig.), *Tasiocera murina* (Meig.), *Tricyphona immaculata* (Meig.), *Ptychoptera albimana* (F.), *Conops vesicularis* (L.), *Pamponerus germanicus* (L.), *Helophilus*

pendulus (L.), *H. parallelus* (Harris), *Pipizella varipes* (Meig.), *Syrphus cinctellus* (Zett.), *S. luniger* (Meig.), *S. ribesii* (L.), *Paragus tibialis* (Fall.), *Sphaerophoria scripta* (L.), *S. philanthus* (Meig.), *Baccha obscuripennis* (Meig.), *Cheilosia antiqua* (Meig.), *Beris chalybeata* (Forst.).

Lepidoptera: *Tyria jacobaeae* (L.), *Polyommatus icarus* (Rott.), *Coenonympha pamphilus* (L.), *Lasioommata megera* (L.), *Erynnis tages* (L.), *Pieris rapae* (L.), *P. napi* (L.), *Anthocaris cardamines* (L.).

DYMOCK FOREST AND WOOLHOPE DOME, HEREFORD —

31st May/1st June 1975

Leader: Dr. M. W. HARPER

This weekend meeting was held in glorious sunshine but cold northerly winds kept the temperature down and consequently there were fewer insects seen than in the previous summer meeting. On Saturday, 31st May, a party of nine proceeded to Dymock Forest on the border of north Gloucestershire and Herefordshire. I was unfortunately prevented from attending at the last moment. A few *Boloria euphrosyne* L. were seen and a single *Leptidea sinapis* L.; the latter species is always rare in this wood. Of greater interest were numbers of larvae of *Orthosia miniosa* D. & S. on oak, but most foliage was noted to be remarkably clean from the usual common defoliating spring larvae. A single female *Ectropis consonaria* Hübn. was found at rest, a very local species in this area.

Several interesting micros were seen, including a single example of the attractive and scarce *Phyllonorycter muelleriella* Zell. and *P. roboris* Zell. *Glyphipteryx forsterella* F. was noted flying around *Carex pendula* Hudson in damp areas of the wood, while the colourful imagines of *Micropterix aureatella* Scop. were seen on tree foliage. Weather conditions were so cold at night that the party adjourned to the relative comfort of a local inn for dinner.

On the following day when conditions were again sunny but cool, the party assembled at Haugh Wood in the Woolhope area. Many species seen the previous day were noted again, but *B. euphrosyne* and *L. sinapis* were much commoner. *M. aureatella* and *P. roboris* were seen again, while imagines of *Minoa murinata* Scop. flew actively in the sunshine. A new species for the area was *Lobesia reliquana* Hübn. which I have not seen in Herefordshire before. Large numbers of the wood ant *Formica rufa* L. were seen everywhere and one member found a single example of the beetle *Clytra quadripunctata* L., the larvae of which live in the nest of this ant.

ASHFORD WARREN, KENT — 1st June 1975

Leader: Mr. J. C. FELTON

Ashford Warren is an area of some 50 acres owned and managed by the Ashford Borough Council as an amenity area and Urban Reserve. It is bisected by the Maidstone to Ashford railway with the western half lying mainly in TQ/94 Tetrad X and the eastern half in TR/04 Tetrad C. Part of the eastern area will be lost to the new M20 motorway.

The purpose of the present visit was to record the fauna and flora of the area to provide baseline data against which to follow changes caused by the motorway and to plan future management policy. The weather proved adverse, overcast and windy in the morning turning to rain in the afternoon,

but despite this many plants (including mosses and liverworts), insects, myriapods, crustacea, birds and mammals were recorded thanks in particular to Mrs. Dolling, Mr. Philip, Mr. and Mrs. Side and Mr. Whitebread. Complete lists have been deposited in the Maidstone Museum archives and with the KTNC.

The main feature of the western area was the wet ground around a pond and small stream. Several of the plants were not yet mature enough for specific determination but a strong colony of *Ranunculus lingua* L. was noted. The higher ground was mainly dominated by bracken with several tree species present, including some fine mature *Castanea sativa* Mill. and large specimens of both *Betula pendula* Roth. and *B. pubescens* Ehrh.

The eastern area was notable for a number of very fine *Quercus robur* L. A pleasing component of the ground flora was *Corydalis claviculata* (L.) DC which proved abundant both along a path under high oaks and also in more open areas. A small area of short grass along a path near the railway proved most interesting, being very reminiscent of certain parts of Hothfield. *Plantago coronopus* L. and *Vicia angustifolia* L. both occurred.

Among the insects, *Tortrix viridana* L. and more interestingly *Zeiraphera insertana* F. were bred from larvae on oak on which the red currant galls of *Neuroterus quercusbaccarum* L. were common. Adults of the local *Argyresthia conjugella* Zell. were abundant about Rowan, an early date. Larvae and pupae of *Elachista cerusella* Hübn. were taken. Several ant species occurred including the rather local *Lasius fuliginosus* Lat.

The rare millipede *Polyzonium germanicum* Brandt has been recorded from a damp part of the eastern area. It was not recaptured. However, the woodlouse *Haplophthalmus danicus* Budde-Lund was taken in its fourth Kentish locality and the centipede *Strigamia crassipes* Koch occurred.

Altogether, Ashford Warren provided an interesting diversity within a small area. The main feature likely to be lost to the motorway is a number of fine old oaks. Provided this number is kept to a minimum and at least some of the better specimens retained, overall loss should be minimal.

INGLESTONE COMMON, GLOS. — 7/8th June 1975

Leader: Mr. J. NEWTON

A poorly attended meeting, Mr. M. Heath and Mr. L. Price were the only members to join me. Possibly the weather conditions the previous week, when it was very cold, were responsible for putting off would-be attenders. Between Tuesday, 3rd June and Saturday, 7th June the temperature rose no less than 50°F.

Actually the day itself was warm and sunny, although very few butterflies were seen, these being the three common whites: *Anthocharis cardamines* L. and *Boloria euphrosyne* L. Hunting for larvae occupied much of our time and the most interesting found were *Ipimorpha retusa* L. and *Pseudosciaphila branderiana* L. The empty webs of *Eriogaster lanestris* L. were seen on blackthorn. At nightfall two actinic lights were set up and 54 species of Lepidoptera were recorded. These contained nothing of exceptional interest but included *Deilephila porcellus* L., *Harpyia bifida* Brahm, *Tethia or or* D. & S., *Plagodis pulveraria* L., *Hydrelia flammeolaria* Hufn. and *Cyclophora annulata* Schulze.

WOOLHAMPTON MARSHES, BERKSHIRE — 14/15th June 1975

Leader: Mr. B. R. BAKER

The Kennet Valley at Woolhampton was viewed under the best conditions possible when nine members assembled in brilliant sunshine and were taken by the leader to a shady area of the marshes where lunch was taken.

The early part of the afternoon was spent in searching for the larvae of *Hydraecia petasitis* Doubl., by examining stems of butterbur, an exercise in which all participants were successful to varying degrees. The larvae varied in size from half to threequarter grown and several were still inhabiting portions of stem well above ground level.

Later on, members were taken on a circular walk of the marshy areas across to the river Enborne, returning along the banks of the river Kennet. Preparations were made during the evening to site members' lamps at favourable trapping positions, and only at midnight, when three additional members arrived after having experienced transport difficulties, did it prove necessary to find additional working space west of Woolhampton village.

The night's work produced a fairly representative list of the Macrolepidoptera of this area, regrettably no records have been received of any of the Microlepidoptera taken.

The macros of more than passing interest were: *Tethea ocularis* L., *Lobophora halterata* Hufn., *Pterapherapteryx sexalata* Retz., *Hyloicus pinastri* L., *Mimas tiliae* L., *Smerinthus ocellata* L., *Laothoe populi* L., *Harpyia bifida* Brahm, *Stauropus fagi* L., *Notodonta dromedarius* L., *Eligmodonta ziczac* L., *Peridea anceps* Goeze., *Pheosia gnoma* F., *P. tremula* Clerck, *Pterostoma palpina* Clerck, *Drymonia dodonaea* D. & S., *Clostera curtula* L., *Mythimna straminea* Treits. — larvae, *M. obsoleta* Hübn., *Acronicta alni* L., *Apamea unanimes* Hübn., *Hydraecia petasitis* Doubl. — larvae, *Chilodes maritimus* Tausch.

The leader would like to express his thanks to Mr. and Mrs. S. Anglis of Woolhampton for their kindness in providing parking for members' cars, and also at very short notice for providing sleeping quarters for two of the party.

WITHERSLACK DISTRICT, CUMBRIA — 28/29th June 1975

Leader: Dr. N. L. BIRKETT

Excellent weather was again provided for the few who attended the meeting. Only five naturalists attended beside the leader, and none of the visitors was a member of the Society! However, much enthusiasm and energy were exhibited in detecting and chasing the rather few insects in evidence.

On Saturday, 28th June, we visited Meathop Moss Nature Reserve and noted the usual insects to be found at this time of year. The following Lepidoptera were noted: *Coenonympha tullia davus* F., *Callophrys rubi* L. (a worn female at a very late date), *Lasiocampa quercus callunae* Palmer, *Diacrisia sannio* L., *Drepana falcataria* L., *Lycophotia porphyrea* D. & S., *Semiothisa clathrata* L., *Ematurga atomaria* L., *Perconia strigillaria* Hübn., *Scopula ternata* Schrank, *Thera obeliscata* Hübn. The various species of Crambidae noted last year (vide *Proc. Brit. ent. nat. Hist. Soc.*, 7: 110) were again recorded.

Diptera were curiously scarce and apart from the 'clegs' (*Haematopota pluvialis* L.) much less in evidence than usual and few were seen. Not a single Syrphid was observed in spite of the good weather conditions and time of year!

Coleoptera were not collected systematically but in one of the small pools, frequent among the peat of Meathop Moss, very many specimens of *Agabus bipustulatus* L. (Col., Dytiscidae) were observed. In the same pool, and others, were also observed a few *Helophorus aquaticus* L. (Col., Helophoridae), one of which was taken for purposes of identification.

In the evening various members of the party were working light traps and sheets in the area, but the results of these efforts have not been reported — yet!

On Sunday, 29th June, the visitors wished to visit other parts of the Lake District and again your leader has no information concerning any results of this work.

It is again a great pleasure to thank Prof. H. W. Miles, Chairman of the Meathop Moss Management Committee, for permission to visit the Reserve, which is administered by the Cumbria Naturalists' Trust.

In these days of expensive motoring one wonders if meetings such as this are worth organising. Let it be said that the leader is only too pleased to offer such help as he is able to any visiting entomologist.

EMERGENCE OF THE KENTISH GLORY

I was very interested to read in recent 'Proceedings and Transactions', references to *Endromis versicolora* L. (Kentish Glory), at the meetings of 14.iii.74, 28.iii.74 and 13.iii.75.

I will remember in 1958, shortly after settling down in Aviemore, having the pleasure of making my first acquaintance with *versicolora*. I decided that a bred series would be much preferable to caught specimens. I successfully reared some two dozen to the pupal stage and looked forward to a perfect series in my collection by late April 1959. None emerged until late April 1960. I reared *versicolora* for a number of years, the pupae were housed in an outside shed but none ever emerged the following year.

I note Dr. MacNulty's statement about temperatures, but I do not think that is the answer in Inverness-shire. I am sure the temperature in Aviemore must have risen above 54°F. at some time in late April and if it did, why did no single winter pupa ever produce imagines?

Incidentally, so far as I know, no female will lay eggs unless supplied with a birch twig which she can ring with eggs.

PHIL LE MASURIER

CORRECTIONS: The following errors have been pointed out in the report of the 1974 Annual Exhibition in Vol. 8 Part 1: —

p. 18: the Malvern Hills are in Herefordshire, not Hertfordshire.

Plate III: the descriptions of Figs. 18 and 23 are transposed.

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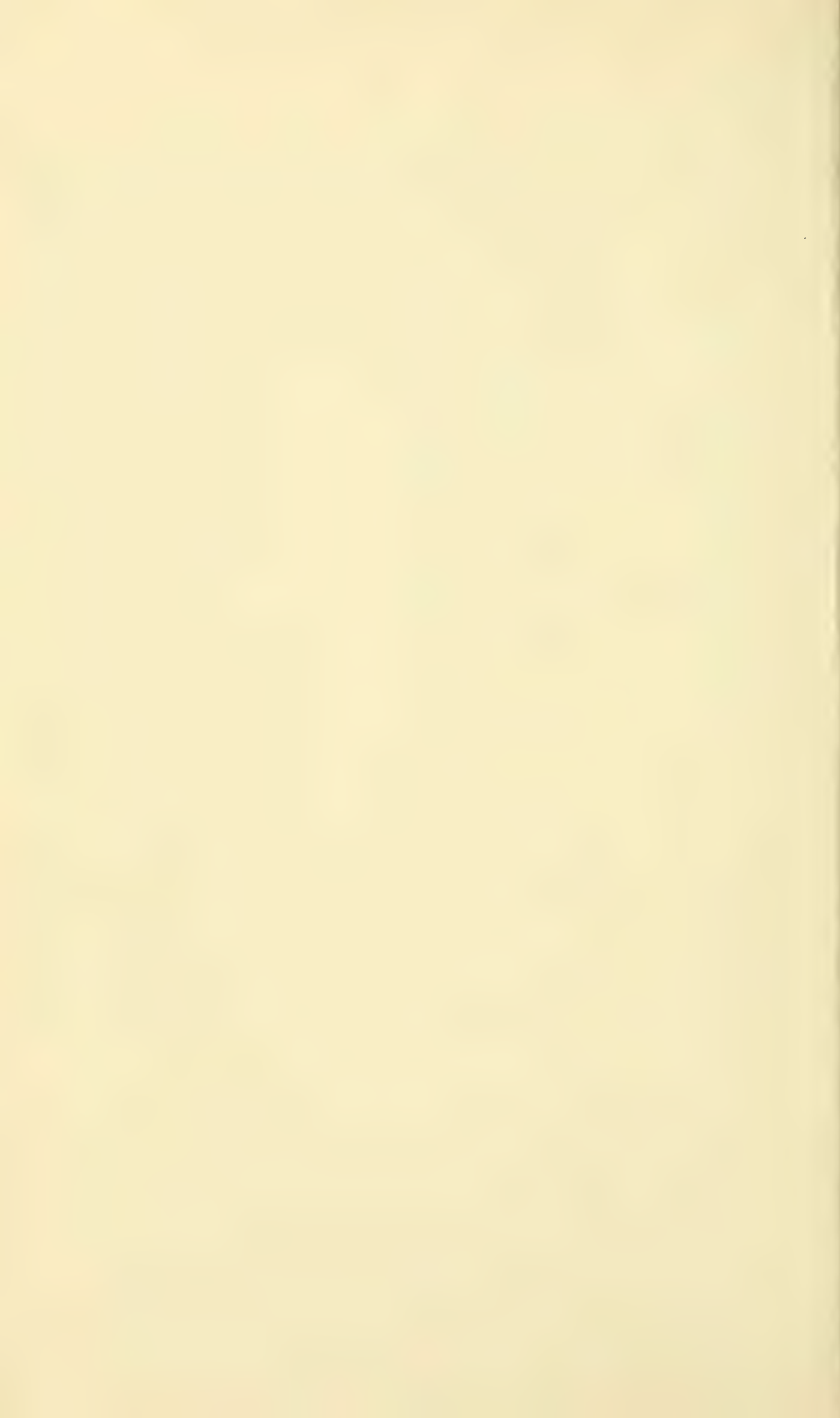
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